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ABSTRACT

The purpose of the project, "Revision and Update of Traffic Safety Manpower Training Program Development Guide," was to develop the HIGHWAY TRAFFIC SAFETY MANPOWER FUNCTIONS GUIDE. This document provides an organizational schema illustrating the fupctions essential to be performed and the interrelationship of these functions to carry out highway traffic safety programs. The purpose of this publication is to assist administrators, managers, and educators through a new approach for describing and classifying manpower functions being performed to enhance highway traffic safety programs. The classification is based upon eleven functional areas consisting of a cluster of 45 functions aimed at achieving a common goal in highway traffic safety. Each function consists of a group of specific actions performed by one or more individuals to achieve five highway safety objectives. Descriptions were derived from selected case studies for each function with support information from the literature and NHTSA program specialists. A bibliography classified by functional areas is reported. (Author)

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HIGHWAY TRAFFIC SAFETY MANPOWER FUNCTIONS GUIDE

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16. Abstract

The purpose of the project, "Revision and Update of Traffic Safety Manpower Training Program Development Guide," was to develop the Highway Traffic Safety Manpower Functions Guide. This document provides an organizational schema illustrating the functions essential to be performed and the interrelationship of these functions to carry out highway traffic safety programs. The purpose of this publication is to assist administrators, managers, and educators through a new approach for describing and classifying manpower functions being performed to enhance highway traffic safety programs. The classification is based upon 11 functional areas consisting of a cluster of 45 functions aimed at achieving a common goal in highway traffic safety. Each function consists of a group of specific actions performed by one or more individuals to achieve five highway safety objectives. Descriptions were derived from selected case studies for each function with support information from the literature and NHTSA program specialists. A bibliography classified by functional areas is reported.

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HIGHWAY TRAFFIC SAFETY MANPOWER FUNCTIONS GUIDE

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February, 1974

PREFACE

In 1971, the National Highway Traffic Safety Administration (NHTSA), U.S. Department of Transportation, supported a research study in highway traffic safety which was conducted by The Center for Vocational and Technical Education, The Ohio State University. This study resulted in the publication Highway Safety Occupational Program Development Guide (Daugherty, et al., 1971). The favorable response received by this publication resulted in a second research study entitled "Revision and Update of Traffic Safety Manpower Training Program Development Guide." The purpose of the second research study was to identify and describe the highway traffic safety functions within the current NHTSA traffic safety program standards. This study resulted in the publication of two documents, a Highway Traffic Safety Manpower Functions Guide (1974) and a final report, Revision and Update of Traffic Safety Manpower Training Program Development Guide (1974).

This Highway Traffic Safety Manpower Functions Guide identifies and describes the major manpower functions in highway traffic safety. The functions range from the technical and supervisory levels through the managerial and professional levels and have been grouped into eleven functional areas. The actual composition of the functional areas vary according to geographical location and local needs. Information related to manpower training programs is not included in the Guide since it was outside the scope of the study.

This guide should be of value as a resource document to professional and managerial personnel, career counselors, community colleges, vocational-technical schools, and other agencies and institutions concerned with manpower development and program planning in highway traffic safety.

Robert E. Taylor
Director
The Center for Vocational
and Technical Education

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This document, Highway Traffic Safety Manpower Functions Guide, is a result of the project "Revision and Update of Traffice Safety Manpower Training Program Development Guide."* The project was conducted by The Center for Vocational and Technical Education for the National Highway Traffic Safety Administration, U.S. Department of Transportation. Ronald Daugherty, associate director of resource development directed the project. Project associate director was Anne C. Hayes and Niall V. Corwell served as project graduate research associate. Samuel C. Reed served as project technician and Pauline Frey was the project secretary. Technical editing was done by Alice J. Brown. Kendrick Spooner, research coordinator, Vocational Education Department, University of Northern Colorado and Richard Coatney, research and development specialist, The Center for Vocational and Technical Education, served as consultants to develop the data collection instruments for the project.

The project staff wishes to extend its appreciation to the ninety-seven on-site specialists across the country who contributed so willingly the information essential to development of the guide. Appreciation is also extended to the NHTSA program specialists who assisted the project staff in identifying the functions presented in the guide; the on-site specialists performing in these functions and for serving as reviewers of the draft materials. George Palmer of NHTSA served as Contract Technical Manager.

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INTRODUCTION

Americans have been confronted with many complex problems of national concern on several occasions during the short history of this country. On each occasion this nation's citizens and their democratic institutions have prevailed. One such national problem, highway traffic accidents, has greatly intensified over the past decade ("Highway Safety Standard...," 1972).

When faced with the seemingly impossible, Americans have responded to the challenge by demonstrating a remarkable ability in marshalling and organizing manpower resources to deal effectively with the problem. The development of the atomic bomb, victory in international conflict, and the lunar conquest are testimonials to America's ability in training and organizing manpower resources in response to challenge. The challenge is to address the problem of highway traffic accidents, by effectively accumulating and directing the country's manpower resources to reduce property damage, personal injuries and death from the nation's highways and streets.

Highway traffic safety is aimed at the reduction in number and magnitude of damage of traffic accidents. A traffic accident can be viewed as "...an event comprised of nine parts, called loss factors" (Wright, 1969). The matrix illustrating these parts includes the three phases: pre-crash, crash and post-crash; and the factors of the human, the vehicle and the environment.

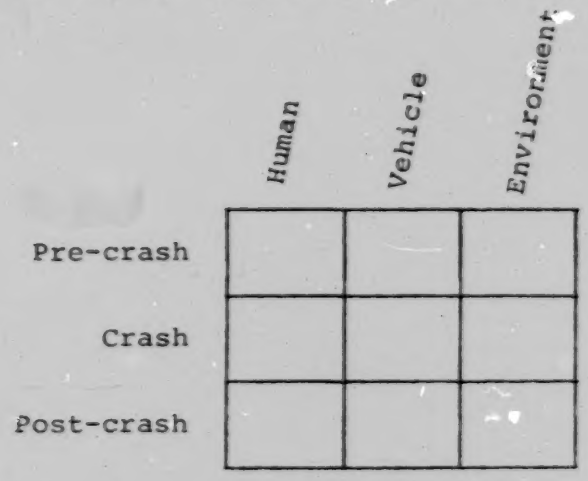

Figure 1. Matrix for Nine Phases and Factors in Highway Traffic Safety

In the effort to reduce the loss from traffic accidents, consideration must be given to each of the nine combinations of phases and factors.

Standards have been promulgated from the legislation of the 1966 Highway Safety Act and the Federal-Aid Highway Act of 1973 to set up countermeasures addressing alleged weaknesses within each of these parts. The enforcement of these standards and the design of these countermeasures are the responsibility of the U.S. Secretary for the Department of Transportation. The Secretary has established two administrations within the Department of Transportation to administer the nation's highway traffic safety program, the Federal Highway Administration (FHA) and the National Highway Traffic Safety Administration (NHTSA).

The Federal Highway Administration is responsible for administering those standards, programs and countermeasures having to do with the factor of environment within each of the three phases of an accident. The National Highway Traffic Safety Administration is charged with administering the human and vehicle factors within each of the three phases.

At the state level, federal legislation requires the governor of each state to designate a person as the state's representative in working with NHTSA to secure federal funds for support of traffic safety programs designed to meet NHTSA administered standards.

The governor's highway traffic safety representative and staff operate according to the requirements and procedures of their respective state. In most instances the staff of the office of the governor's highway traffic safety representative serve in a coordinating and collecting role to the various state agencies charged with carrying out a portion of one or more of the state's highway traffic safety programs.

The governor's highway traffic safety representative must submit to the NHTSA offices, a Comprehensive Plan and an Annual Highway Safety Program Plan. The Comprehensive Plan is the governor's multi-year legislative, organizational, operational, and financial plan in accordance with uniform standards. The Annual Work Program Plan outlines the work to be carried out within the state, the specific goals to be achieved, and resources to be used during a particular year to implement the state's Comprehensive Plan for highway traffic safety.

The overall state highway traffic safety program is a composite of several individual programs, generally operated by a variety of agencies within the state. Each state department of transportation or motor vehicles may administratively operate

several of the state programs such as the police traffic services, vehicle registration and inspection, driver licensing, accident investigation and driver licensing. The state department of health may be responsible for emergency medical services while the state department of education administratively handles pupil transportation.

While each of these agencies, and other such state agencies, may have responsibility for a highway traffic safety effort, this responsibility may be a very small portion of the total charge. For example, the state department of health may have responsibility for sanitation, environmental standards, communicable disease control, food standards, etc., in addition to emergency medical services. Even within the area of emergency medical services, a major portion of the program deals with services other than those provided traffic accident victims. Likewise, the state agencies having highway traffic safety programs may be responsible primarily for activities and programs having to do with other than highway safety.

The local municipalities operate highway traffic safety programs in compliance with state programs or as a specific countermeasure effort which is funded through the coordination of the office of the governor's highway safety representative. These local programs are generally operated independently of one another between departments or within departments. In a very few instances local municipalities have designated a specific office to coordinate the safety or highway traffic safety programs within the various agencies of the respective municipality. As is the case with state agencies, the local agencies generally have many responsibilities, one of which is highway traffic safety and often a relatively minor activity within the total work program.

The Federal Aid Highway Act of 1973 (P.L. 93-87), has emphasized the dissatisfaction Congress has with the lack of citizen participation in highway traffic safety. The legislation calls for the Secretary of Transportation to conduct an investigation and study of ways and means for encouraging greater citizen participation and involvement in highway traffic safety (Rosenfield, 1973).

The increasing complexity and scope of the highway traffic accident problem and the limited resources available to implement the programs to address the problem have encouraged the U.S. Department of Transportation's National Highway Traffic Safety Administration to examine the whole question of manpower for implementing and maintaining such safety efforts. Previous studies sponsored by the National Highway Traffic Safety Administration (NHTSA) have placed emphasis on viewing the total or

major portions of the total manpower picture in highway traffic safety (Booz, et al., 1968; Stanford Research Institute, 1969; Daugherty, et al., 1971).

To resolve questions of manpower for highway traffic safety is a complex task. Standard occupational classification such as the Dictionary of Occupational Titles and the Civil Service classifications and titles have no direct references nor cross-references to highway traffic safety. The job titles and descriptions included in these publications seldom contain any reference to highway traffic safety, even for those occupations where a majority of the individual's performance is aimed at safety on the streets and highways. Similarly, other literature such as college catalogues, course descriptions, or even the classification system, Vocational Education and Occupations issued by the U.S. Department of Health, Education, and Welfare seldom include highway traffic safety as a reference in the description or as a recognizable part of the instructional program.

The difficulty in identifying and classifying highway traffic safety occupations, or individuals who hold such positions, makes personnel administration and research in manpower development complicated and inconsistent. Research findings are difficult to compare because of the lack of common terminology and basic references. An administrator or manager of highway traffic safety programs may have difficulty in determining the manpower functions required to implement and maintain programs, in identifying logical arrangements of functions for manning the efforts and in determining the transferrability of manpower from one program to another. Educators may find highway traffic safety a term which provides little guidance in developing educational programs for preparing manpower for this field.

It is the purpose of this publication to assist administrators, managers and educators through a new approach for describing and classifying manpower functions being performed to enhance highway traffic safety programs. It is intended that this publication provide one of the most comprehensive views of manpower for the highway traffic safety programs represented through the factors of the human and the vehicle, as administered by NHTSA, in terms of performance requirements or functions. The descriptions and classifications should provide the researcher with a more standard basis for the study of manpower in highway traffic safety, the administrator with a better understanding of manpower functions, and the educator with more of a performance base from which to develop educational programs.

Program administrators, personnel officers and those responsible for training individuals in highway traffic safety also may find this publication useful. Major functions necessary for

establishing and maintaining a rather comprehensive highway traffic safety program are described. Within the functional areas there exists a range of options for preparing and deploying manpower to most effectively and efficiently carry out a program within local settings. The functions described may also serve as a basis for reconsidering some of the personnel practices and policies that may restrict or diminish effectiveness or efficiency in highway traffic safety programs.

By 1980, the total number of all employees in local and state governments is expected to include more than 13 million individuals (Korim, 1971). No accurate figures are available for predicting what portion of these public employees will be responsible for carrying out the various functions essential to future highway traffic safety programs. Projections of manpower levels and needs for highway traffic safety have been difficult to derive because of poor job classification systems, reluctance to predict future budgetary trends in government, and the work pattern which fails to distinguish between safety manpower functions performed as a full time job and a part-time job in which non-highway traffic safety functions are also performed. Therefore, it is beyond the scope of this publication to provide any manpower figures to correspond with the functions identified and described within.

Within the functional areas responsible for the administrative management, and supervision aspects of highway traffic safety programs there exists many "political appointments," or "favorite son" positions. This method of selecting employees may result in a high turnover rate with short tenure and little correlation between needed competencies and candidate qualifications.

The civil service system is often involved in the hiring of highway traffic safety specialists. Although the civil service system is undergoing some sweeping changes, there still exists deficiency in placing sufficient emphasis on competency-based performance, in-service training requirements, credit for related training and the recognition of individuals engaged in performing highway traffic safety functions.

This publication presents a classification schema (Figure 2) for many of the functions performed in highway traffic safety programs as represented through NHTSA. The classification is based upon functional areas which consist of a cluster of functions aimed at achieving a common goal in highway traffic safety. Each function within the functional area consists of a group of specific actions or roles performed by one or more individuals in order to achieve specific objectives of highway traffic safety. Each function is presented through an overview, a

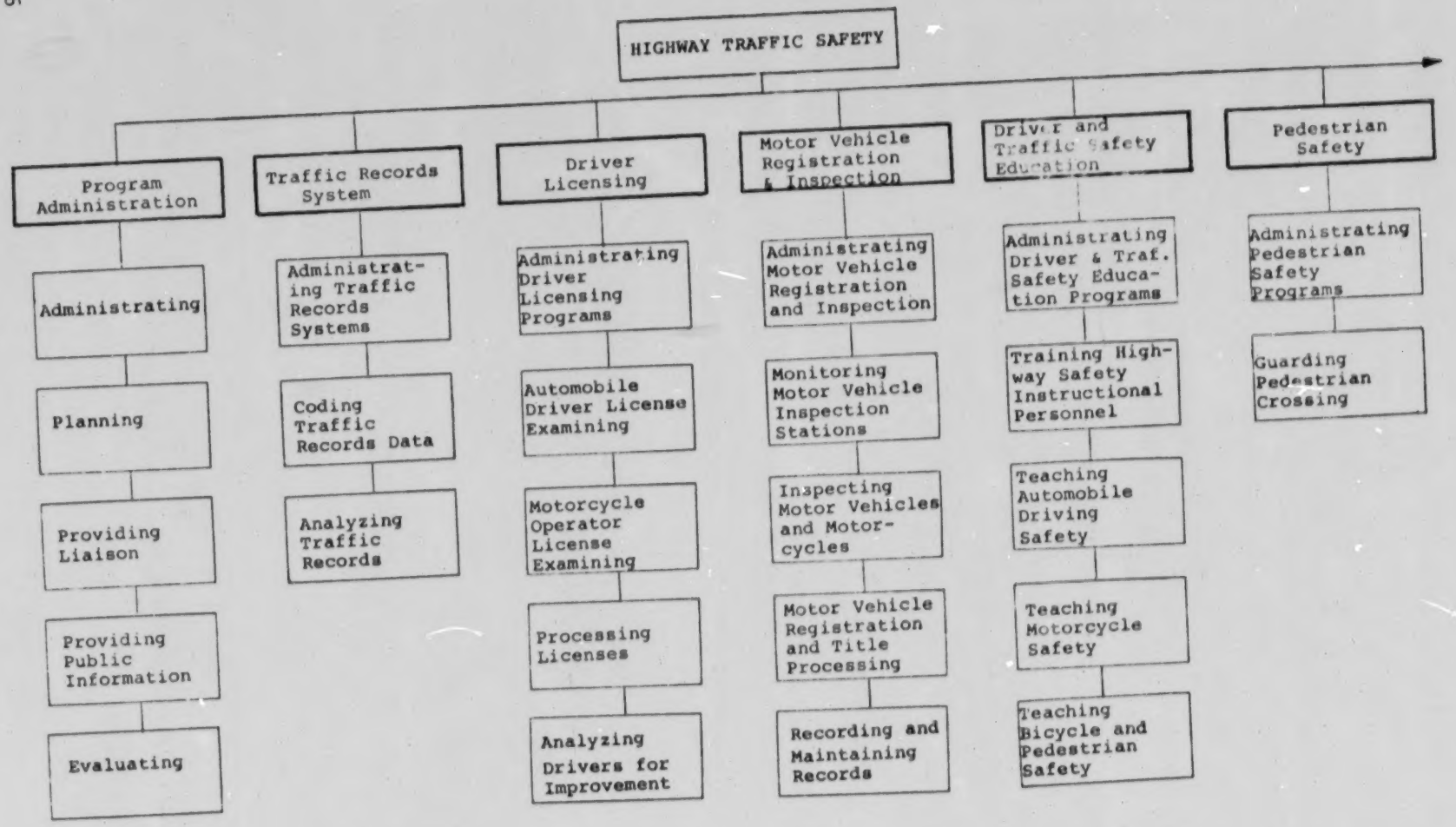

Figure 2. Highway Traffic Safety Functional Areas and Related Functions

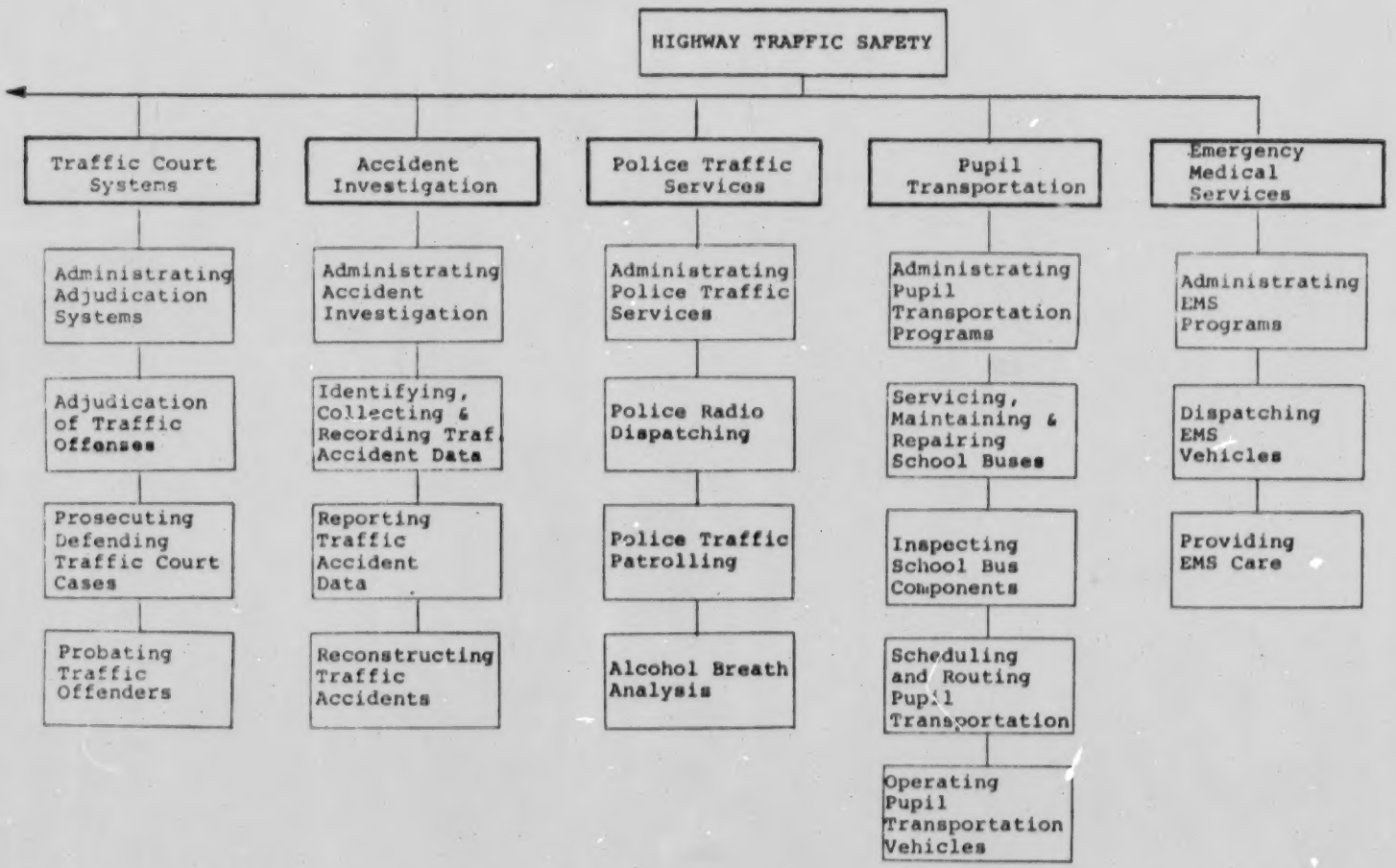

Figure 2. (Cont'd.)

description of that function as performed and with some qualifications for personnel entering a job in which the function is performed.

The functional areas and functions described in this publication are derived from one or more selected case studies for each function, supplemented with what support information could be found within the literature. The cases selected for study were based upon the recommendation of NHTSA personnel and other highway traffic specialists. Each case was recommended as one of the exemplary efforts in operation throughout the country. Each function described in this publication is based upon an actual case existing as a job, portions of a job, or combination of jobs being performed somewhere in the United States. The contents are strictly the interpretations and opinions of the authors who have assimilated the information from limited, but carefully selected sources.

Caution should be exercised in making generalizations about the total highway traffic safety workforce from the limited case studies included in this publication. An extensive task analysis of each function on a broad based population would reveal far more detailed information necessary to make generalizations, safety program decisions and educational program decisions. In addition, the programs administered through the Federal Highway Administration represent highway traffic safety functions which are not included in this publication.

The publication should prove a basis for researchers, safety program administrators, managers and educators to examine their highway traffic safety interests and responsibilities on the basis of job performance or function. This approach to manpower development and management in highway traffic safety could be instrumental in bringing about desired efficiency and effectiveness in performance to implement and maintain safety programs.

HIGHWAY TRAFFIC SAFETY PROGRAM ADMINISTRATION

INTRODUCTION

Highway traffic safety program administration may be regarded as a functional area within the overall highway traffic safety program. Program administration functions are performed at federal, state, and local levels, but primarily by the office of the governor's highway safety representative in each state. The challenge of program administration at the state level is to embrace all of the relevant services and activities in highway safety and draw them together into a unified program that works in concert to increase highway traffic safety.

The functional area of program administration consists of administrating, planning, providing liaison, providing public information, and evaluating functions (see Figure 3). In the actual operation of highway traffic safety programs, the various administrative functions overlap and are not discrete. For example, evaluation may exist, to some degree, in several other functions such as planning and staffing. However, five functions are deemed sufficiently distinct and important to be listed and described below as separate highway traffic safety functions.

Each administration function, when performed by the office of the governor's highway safety representative, is largely a coordinating activity. It is the responsibility of each governor's representative to prepare the state's highway safety Comprehensive Plan and Annual Work Program and to submit them to the U. S. Department of Transportation for approval. The Comprehensive Plan is the governor's combined multi-year legislative, organizational, operational, and financial plan, in accordance with uniform standards promulgated by the secretary of transportation. It is designed to reduce traffic accidents and resulting deaths, injuries and property damage. The plan covers not only the state's own operations but also those of its political subdivisions. The Annual Work Program details the work to be done, the specific goals to be achieved, and the resources to be used during a particular year to implement the State's Comprehensive Plan.

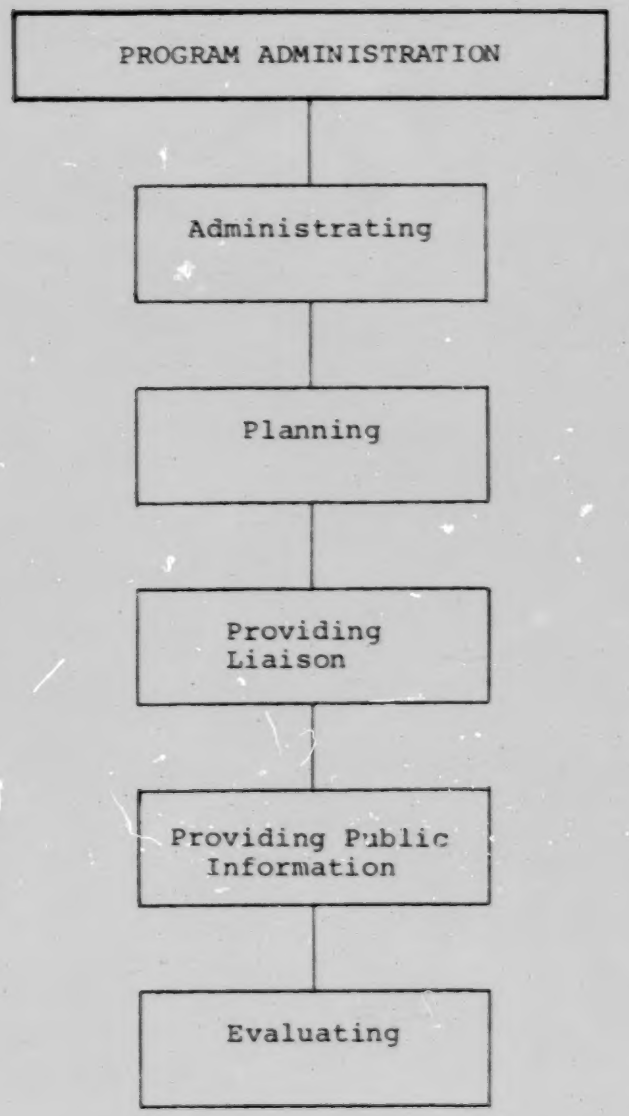

Figure 3. Functions of Program Administration

ADMINISTRATING

The function of highway traffic safety program management at the state level is largely concerned with formulating policy and organizing the program elements into a coordinated program. In essence, program administrating assembles and utilizes the various highway traffic safety resources toward the common goal of reducing crashes and fatalities on the nation's streets and highways. This function is performed at the federal, state, and local levels but primarily by the office of the governor's highway safety representative.

The function of program administrating in highway safety is not a distinct entity and usually includes responsibility for coordinating and supervising the planning, evaluation, liaison, and giving of public information. Staffing is a significant role of program administrating. It includes recruiting, selecting, orientation, promoting, transferring and releasing highway traffic safety personnel (Yoder, 1962). At the state level, the responsibility of the program administrating function includes the cooperative and coordinating relationship with the administrators who manage the various areas of the state highway safety activity. Considerable coordination is carried out at this level in order to implement the overall program successfully. At the local level, the function of program administrating provides leadership, direction, and supervision in implementing the program as developed (FHA, 1969).

The program administrating function makes a significant contribution to highway traffic safety by providing the leadership and coordination among the various components that are essential for the successful implementation of such a program. This function is performed by individuals with various job titles and within various agencies. The performance of the administrating function was observed in two instances: "Executive Director, Office of Highway Safety Planning" in a north central state; and "Chief, Highway Safety Group" in an eastern state.

PLANNING

Planning highway traffic safety programs involves the analysis of data on the previous program(s) and of future trends in order to establish realistic goals, objectives, policies and procedures for new and/or ongoing safety programs. In addition, the planning function incorporates budgeting

resources to support the program plan, researching within the program to identify more efficient and effective ways to accomplish the goals, and drafting legislation to enable or support the program plan. The planning function is carried out by the office of the governor's highway safety representative to fulfill the requirements of submitting the annual work plan and budget to the National Highway Traffic Safety Administration and the Federal Highway Administration.

Highway traffic safety program planning is a means of identifying problems, establishing objectives, determining alternative solutions, choosing among the alternatives, setting priorities, allocating resources and devising an organized and systematic approach to reducing traffic accidents and the resultant losses from these accidents. Program planning is aimed at providing maximum safety on the nation's streets and highways within the resources provided by society for this purpose. The planning function should be initiated by the governor's representative. Various state agencies and local political subdivisions are active in planning, compiling the segments of these plans, and implementing plans pertaining specifically to highway traffic safety. Priorities based on needs must be established and resources allocated. These compiled plans form the statewide comprehensive and annual plan for highway traffic safety.

The function of planning highway traffic safety programs is performed by individuals with a variety of job titles and within various governmental agencies. The performance of the planning function was observed in several instances: "Chief, Highway Safety Group" on the staff of the Governor's Highway Safety Representative in a major north central state; "Manpower Coordinator" on the staff of the Governor's Highway Safety Representative in a major southern state; and "Director of Public Safety" in a major southeastern state.

PROVIDING LIAISON

The successful implementation of a state's highway safety program depends to a large degree on communications and coordination among the many diverse elements within it. These elements include state agencies such as public health, police, and education; various groups involved in highway safety projects for local communities and political subdivisions; and agencies of the federal government. The function of highway safety program liaison is primarily concerned with the office of the governor's highway safety representative maintaining contact and good working relationships among these elements.

Additional responsibilities may include monitoring, auditing, interpreting, and reporting on the various activities involved in a highway traffic safety program. The function requires a knowledge of the agencies, public and private, to which people can be referred for information.

The program liaison function in highway traffic safety contributes to the overall goals of a highway safety program by promoting cooperation and coordination among program elements. This greatly enhances the effectiveness of the total program. The function of program liaison was observed in a north central state where it was performed under the job title "Chief, Program Liaison" on the staff of the governor's highway safety representative.

PROVIDING PUBLIC INFORMATION

The prupose of the public information function in a comprehensive statewide highway traffic safety program is to make people aware of the size and urgency of the highway safety problem and to let them know about planning and ongoing activities. There are indications that a large segment of the public fail to comprehend the magnitude of the deaths, injuries and property damage that result from traffic crashes ("Making it Safer . . .," 1972). The public information function also serves to inform the public of the highway traffic safety laws and regulations affecting them. Major problem areas within highway safety are identified and special campaigns are conducted to emphasize these areas.

The performance of the public information function in highway safety requires the identification of target audiences; the evaluation of their current level of knowledge; and the determination of the needs for change in levels of knowledge, attitudes, or behavior of the target audience. Reaching the enormous numbers of individuals within a state requires the use of all available channels of communication including mass media (e.i., newspapers, radio, television, films, and booklets). Responding to pupil inquiries and correspondence is another responsibility of this function. ". . . the importance of public opinion should never be underestimated, legislation follows opinion . . ." (Rosenfield, 1973).

The function of providing public information contributes to the overall objectives of highway traffic safety by alerting the public to the dangers of the problem and by enlisting their aid and support for the various programs. The public information function is usually performed in the office of the

governor's highway safety representative. The function was observed under the job title "Program Coordinator" in the office of highway safety planning in a major north central state.

EVALUATING

The function of evaluating state traffic safety programs is concerned with measuring the performance of highway traffic safety programs, individual components of such programs, and plans for future programs. Evaluation requires indepth factual information on all elements of highway traffic safety programs as well as guidelines for evaluating this data. The office of the governor's highway safety representative is generally responsible for the coordination of evaluation throughout the highway traffic safety program.

The function of evaluation involves advising and monitoring all other areas of highway safety and includes analyzing, auditing, preparing reports, and research and development. Effective evaluation requires that measurable objectives be established and that evaluation techniques by incorporated into each highway safety project or program. Evaluation provides the data which indicates where the emphasis should be placed in highway traffic safety projects and programs.

TRAFFIC RECORDS SYSTEMS

INTRODUCTION

The purpose of the traffic records system is to assure that appropriate data on traffic accidents, drivers, motor vehicles, and roadways are available for planning and implementing highway traffic safety programs (FHA, 1969). The system provides a reliable means for identifying short-term changes and long-term trends in the nature of traffic accidents and a valid basis for detecting contributing factors in traffic accident causation. Effective utilization of traffic records data provides a means for developing safety improvements which could reduce the number of traffic accidents and injuries.

Effective management in highway safety requires facts on which to base decisions and data to explain needs and programs to the public (Slavin, 1970). A traffic records system should be complete, accurate, comprehensive, and timely. The system involves collection of raw data, followed by coding, storage, retrieval, analysis, and dissemination to potential users. Users of the system include state, county, and city departments of highway traffic safety, enforcement agencies, traffic engineers, court systems, and personnel in all areas of highway safety. Traffic record systems have yet to be fully developed and currently vary considerably according to location. Standardization is a major problem in the development of comprehensive traffic record system.

Standard 10 of the Highway Safety Act of 1966 provides guidelines and laws governing traffic records systems. Three functions of traffic records systems are: (1) Administrating Traffic Records Systems; (2) Coding Traffic Records Data; and (3) Analyzing Traffic Records (see Figure 4).

ADMINISTRATING TRAFFIC RECORDS SYSTEMS

The function of administrating traffic records systems involves developing and implementing program policies and providing direction in all areas of the traffic records program, including the analyzing and coding of traffic records data.

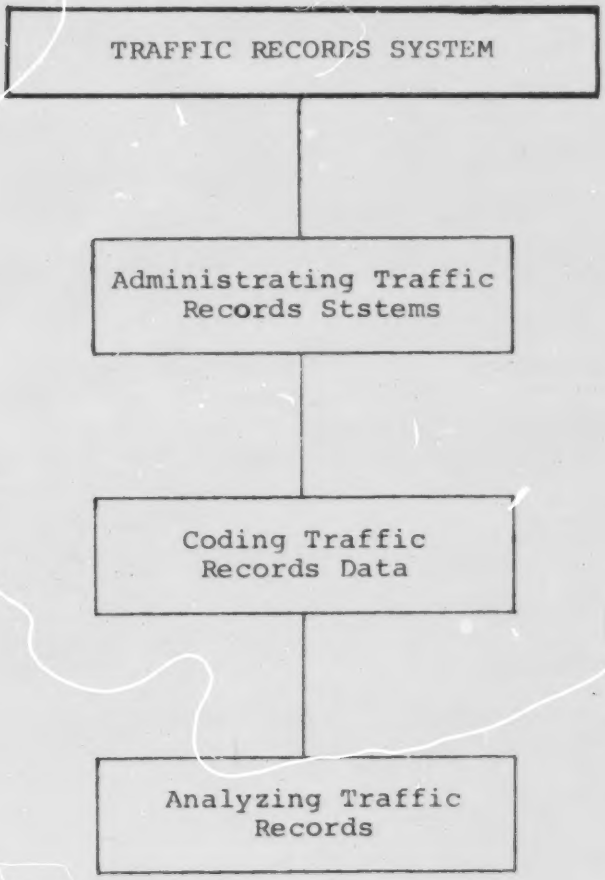

Figure 4. Functions of Traffic Records System

The responsibilities of administrating traffic records systems consist of planning, evaluating, and updating traffic records programs; drafting legislation or recommending executive action to improve the programs; training personnel; designing components of the system to be compatible with other related data processing systems; and providing liaison between the program and users and supporting agencies of the program. These agencies include other highway traffic safety agencies, traffic engineers, enforcement agencies, court systems, the office of the governor's highway traffic safety representative, and NHTSA.

Some of the specific duties of traffic records systems administration include purchasing computers and other systems equipment, staffing all segments of the traffic records program, preparing budgets and annual reports, securing state and federal funding for records programs, and providing traffic safety information and statistics to the public and the news media. Providing liaison between the traffic records functions and the office of the governor's highway safety representative and other agencies is an important role, particularly for planning and evaluation purposes.

The function of administrating traffic records systems contributes to highway traffic safety by providing the leadership and coordination essential to implementing a successful traffic records program, and by assuring that components of the system are compatible with federal and state standards for traffic records systems.

The administrating of traffic records systems was observed in a northeastern capital city under the job title "Director, Traffic Records Project." However, in many areas the function is performed under various titles, such as "Traffic Records Analyst," "Traffic Records Coordinator," and "Manager, Data Processing."

CODING TRAFFIC RECORDS DATA

The function of coding traffic records data is concerned primarily with transforming raw input data from traffic accident reports, driver licensing and motor vehicle registration data, into data forms which can be stored in a central storage unit such as a computer.

Coding traffic accident report data involves analyzing all the various accident reports submitted by enforcement units, emergency medical services, and any other highway safety

governmental units involved in reporting the accident; resolving conflicting statements and descriptions to determine the actual facts related to the accident; and assigning the proper code to information for storage in the computer.

The function of coding traffic records data contributes to highway traffic safety by facilitating the interchange of information between the various highway safety agencies at all levels by standardizing data elements and codes (NHTSA, 1972).

This function was observed in a northeastern state capital city under the job title "Statistics Clerk." This function is not only performed at the state level in the traffic records system, but also in various traffic records input agencies, such as driver licensing or vehicle registration at the state level. Large municipalities may have their own traffic records system in addition to the state records.

ANALYZING TRAFFIC RECORDS

The function of analyzing traffic records has responsibility for implementing techniques and procedures to utilize data on drivers, motor vehicles, highways, and traffic accidents for the improvement of highway traffic safety programs (NHTSA, 1972).

Analyzing traffic records requires identifying and structuring the traffic records safety information requirements for each highway safety agency using the records system. The operating techniques, procedures, and methods utilized in the records system, including input, storage, processing, and conversion of data, are continually analyzed and evaluated. Analysis provides meaningful statistical measures of the traffic accident problem to show magnitude, changes, and trends, as well as identifying areas in need of additional research.

The function of analyzing traffic records makes a significant contribution to highway traffic safety by transferring, merging, and utilizing traffic records data between the various agencies of highway safety in order to cooperatively provide information vital to planning and evaluation in highway safety program development.

Analyzing traffic records is a function of the traffic records system that was observed in a northeastern state capital under the job titles "Statistics Clerk," and "Statistician." However, most states are currently participating in an NHTSA-sponsored Fatality File Analysis program, in which

an additional job title, "Fatality File Analyst," has been added to traffic records systems. These analysts also have access to traffic records data of the other state highway safety agencies.

DRIVER LICENSING

INTRODUCTION

The functional area of driver licensing makes a significant contribution to highway traffic safety by establishing and maintaining criteria which all vehicular drivers must comply with in order to be licensed to drive on the nation's highways. Driver licensing is a function of state governments and is essentially a screening process aimed at preventing unsafe drivers from operating a vehicle on the highways.

The adoption of strict licensing and renewal procedures, standardized across the nation, is essential for the successful operation of the program. The fact that there are in excess of 118 million licensed vehicle operators in the United States is indicative of the scope of driver licensing programs (NSC, 1973). The number of licensed drivers increases by about four million each year ("How California . . .," 1972).

At the operational level, driver licensing is performed in numerous license examining stations across the nation, usually under the jurisdiction of the bureau of motor vehicles of the highway patrol. The stations are primarily concerned with evaluating each applicant's knowledge of laws related to highway safety as well as the applicant's ability to operate a vehicle safely. In addition to administering examinations and issuing new vehicle operators licenses, driver licensing includes the renewal of existing licenses and the recording-monitoring of limitations and sanctions placed upon existing licenses.

Five functions of the driver licensing program are: (1) Administrating Driver Licensing Programs; (2) Automobile Driver License Examining; (3) Motorcycle Operator License Examining; (4) Processing Licenses; and (5) Analyzing Drivers for Improvement (see Figure 5).

ADMINISTRATING DRIVER LICENSING PROGRAMS

The function of administrating driver licensing programs consists of planning and coordinating the daily work flow of

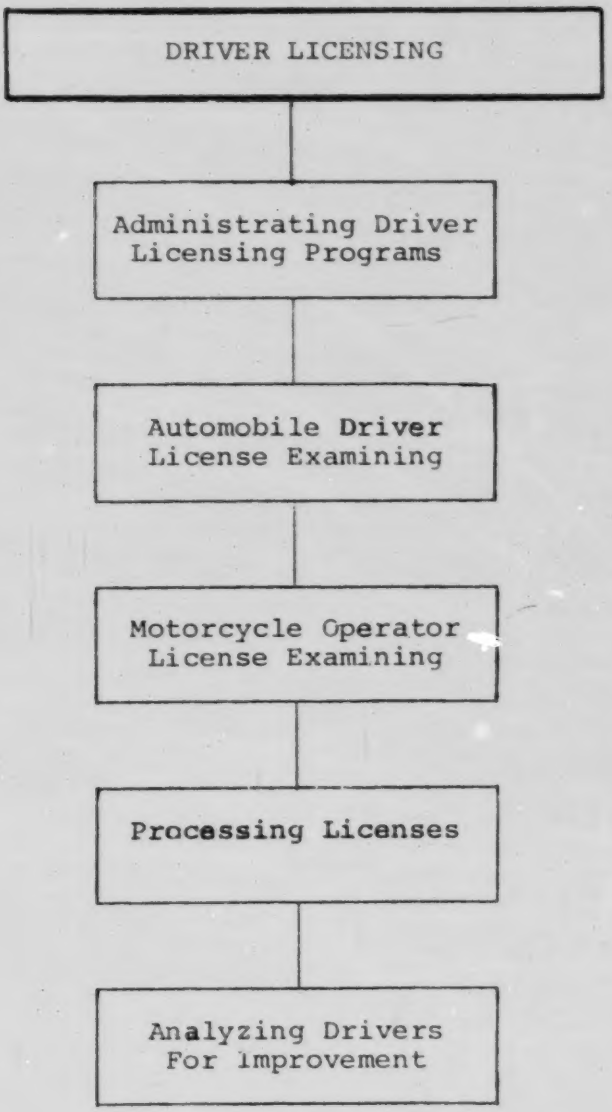

Figure 5. Functions of Driver Licensing

examinations and processing licenses in the license examining station. Administrating the program includes supervision and training of station personnel, supervising license record keeping, interpretation of licensing rules and regulations to the station staff and general public, and designing and modifying road test routes used for examinations. Preparation of periodic reports and annual budgets are elements of administrating the licensing programs, as is the responsibility for certifying that fairness and objectivity are carried out during examining procedures.

In the same way that the functional area of highway traffic safety program administration is divided into departments of planning, evaluation, liaison, and public information, the administration of driver licensing programs is responsible for similar activities or program elements in the licensing division. The administration coordinates with the office of the governor's highway safety representative and is responsible for securing the finances to operationalize all aspects of driver licensing.

Administrating driver licensing programs makes a significant contribution to highway traffic safety by ensuring that the licensing station personnel are fair and objective in screening individual applicants for operator licenses in order that only qualified drivers are allowed to operate vehicles on the nation's highways.

The function of administrating driver licensing programs was observed in a western capital city under the job title, "Manager, Department of Motor Vehicles," and in a midwestern capital city as a function of the state highway patrol. Throughout the country there are many variations in the administration of the driver licensing programs, but in general the duties are similar whether the administrator is in the bureau of motor vehicles, the highway patrol, or some other division of the state government.

AUTOMOBILE DRIVER LICENSE EXAMINING

The function of automobile driver license examining is concerned primarily with supervising automobile driver license applicants through a written examination and a road test. The written examination is usually required to obtain a learner's permit for use in gaining driving experience prior to taking the road test. This test consists of examinig the applicant's knowledge of traffic laws and regulations, identification of

road signs, and testing of visual competence for driving. The second half of the driver license examination, the road test, requires the applicant to perform a series of driving maneuvers on a designated course or driving range. The maneuvers generally consist of acknowledging traffic signals, performing maneuvers, including parking procedures. Use of standard testing guidelines, designated by the state and recommended by NHTSA, determine the qualification of the applicant.

Conducting vision tests, reviewing of past driving records and verifying current vehicle insurance, are also duties of the automobile driver license examining function.

Automobile driver license examining contributes to highway traffic safety by screening driver license applicants and denying driving privileges to unsafe or unqualified drivers.

The function of automobile driver license examining was observed in a western capital city under the job title, "Driver License Examiner," and in a midwestern capital city by the state highway patrol.

MOTORCYCLE OPERATOR LICENSE EXAMINING

Motorcycle operator license examining is similar to automobile driver license examining in that the administering of a driving test is the primary responsibility. In most states that require a motorcycle operating license, the written test is the same as the automobile driver license test. This allows the motorcycle operator license examination to concentrate on the road test, leaving the responsibility for the written test to those responsible for the automobile driver license examining function.

The actual driving test may take place on a specially constructed driving course, in a parking lot, or on a lightly-traveled street. Pre-examination of the applicant's motorcycle and safety equipment is required before beginning the road test. The examination consists of the applicant's maneuvering through a series of starts, stops, turns, signals, and safety movements. Performance on the test is rated by using standard testing guidelines recommended by NHTSA and designated by the state.

Motorcycle operator license examining, not unlike driver license examining, contributes to highway traffic safety by screening motorcycle license applicants and denying driving privileges to unsafe or unqualified drivers. The rapid increase in the number of motorcycles on the highways--from 660,400 in 1962 to 3,787,000 in 1972--has created a demand for screening motorcycle operators (NSC, 1973).

The function of motorcycle operator license examining was observed in a midwestern capital city under the job title, "Motorcycle License Examiner," under the administration of the state highway patrol.

PROCESSING LICENSES

The function of processing licenses begins with the issuing of temporary learner's permits and continues through issuing licenses, renewals, transfers, and occasionally, suspensions of driving privileges.

The record keeping system is of vital importance to the function of processing licenses. Tabulation of expiration dates for learner's permits and licenses, transfer of driving records from other states, and accumulation of driving violations of individual drivers, are all kept in the license bureau's records of all drivers.

Processing licenses contributes to highway traffic safety by providing information as to the identification of the drivers and the validity of an individual driver's license, thus providing enforcement agencies a basis for suspending or restricting driving privileges of unqualified drivers. It also provides a statistical basis for planning other highway traffic safety programs.

Processing licenses was observed in a western capital city under the job titles "Clerk," "Typist," and "Cashier," driver license bureau. In a midwestern capital city, the record keeping was found to be a function of the license bureau, but the actual processing of the licenses was being performed by a private automotive association, under a subcontract from the license bureau. In a western state the processing of licenses is handled almost exclusively through a mailing procedure from one state agency location in the capital city.

ANALYZING DRIVERS FOR IMPROVEMENT

The function of analyzing drivers for improvement is responsible for determining the existance of physical or mental defects, disabilities, or deficiencies in problem drivers, and for recommending appropriate restrictions or conditions of probation in cases where the problems affect the individual's safe driving. In some cases, withdrawal of driving privileges may be required to eliminate negligent, incompetent, and physically or mentally handicapped drivers from the highway.

Analysis of the competency of the driver is determined through several processes, including: research into the driver's past driving performance by analyzing the individual's driving records; personal interviews with the driver to ascertain his driving attitudes, abilities, and disabilities; and consultation with physicians and medical and social agencies which may be able to provide additional information on the driver being analyzed. Alcoholics Anonymous, state boards of health, and various state record systems are examples of some of the agencies that may be contacted for information and provide assistance in fulfilling this function. These same agencies may assist in the rehabilitation of the driver, when analysis of the driver deems it necessary.

The major goals of the driver improvement program as stated by the American Association of Motor Vehicle Administrators include:

> To improve the attitudes and driving performances of drivers who, because of traffic violations and/or accident involvement, are known to constitute a hazard on the highways; and to instill in those drivers the will to better their driving practices.
>
> To determine whether problem drivers suffer from physical and mental deficiencies, the extent of such deficiencies, and the ways they affect the safe operation of motor vehicles.
>
> To apply appropriate restrictions, or to use the device of 'deferred action,' when drivers suffer from physical or mental conditions that do not appear to preclude safe driving.
>
> To eliminate from the highways, the unsafe, incompetent, and physically or mentally unqualified driver by refusing to license him or by withdrawing his driving privilege (NHTSA, 1973).

Analyzing drivers for improvement contributes to highway traffic safety by attempting to improve the attitudes and driving performances of drivers known to be hazardous on the highway; and by restricting or suspending the driving privileges of those drivers known to be unsafe, incompetent, or unqualified.

The function of analyzing drivers for improvement was observed in a western capital city under the job title "Driver Improvement Analyst." However, driver improvement should not be confused with pre-sentence investigation, which may be similar in nature but is a function of the court system; while analyzing drivers for improvement is a function of driver licensing. The function of driver improvement analysis may also be performed in the functional areas of police traffic services and driver and traffic safety education. In each case, the overall objective remains the same regardless of the agency or group responsible for conducting the function.

MOTOR VEHICLE REGISTRATION AND INSPECTION

INTRODUCTION

When there were few roads, few automobiles, and few drivers, there was no apparent need for motor vehicle registration and inspection. After World War I, automobile thefts increased with the popularity and necessity of automobile ownership, thus bringing about a need for identification of ownership. As highways improved and speed limits were raised, the need for ensuring the safety of vehicles developed. Currently, with more than 121 million vehicles operated by over 118 million licensed drivers over 1.25 trillion miles (NSC, 1973), the need for motor vehicle registration and inspection becomes obvious.

Motor vehicle registration and inspection provides the service of identification and ownership of vehicles and the assurance that vehicles meet the minimum safety inspection standards. It also makes available pertinent data for accident and injury causation research, and safety program planning and development. NHTSA has described a four-year study, 1968-71, which indicated that twenty-four percent of all accidents involving heavy vehicles were the fault of defects in the braking system ("News . . .," 1973).

Standards one and two of the Highway Safety Act of 1966 provide guidelines and laws governing the state motor vehicle registration and inspection programs. Five functions of motor vehicle registration and inspection are: (1) Administrating Motor Vehicle Registration and Inspection, (2) Monitoring Motor Vehicle Inspection Stations, (3) Inspecting Motor Vehicles and Motorcycles, (4) Motor Vehicle Registration and Title Processing, and (5) Recording and Maintaining Records (see Figure 6).

ADMINISTRATING MOTOR VEHICLE REGISTRATION AND INSPECTION

The function of administrating motor vehicle registration and inspection provides leadership direction in all areas of the program, including: monitoring motor vehicle inspection stations, inspecting motor vehicles and motorcycles, motor

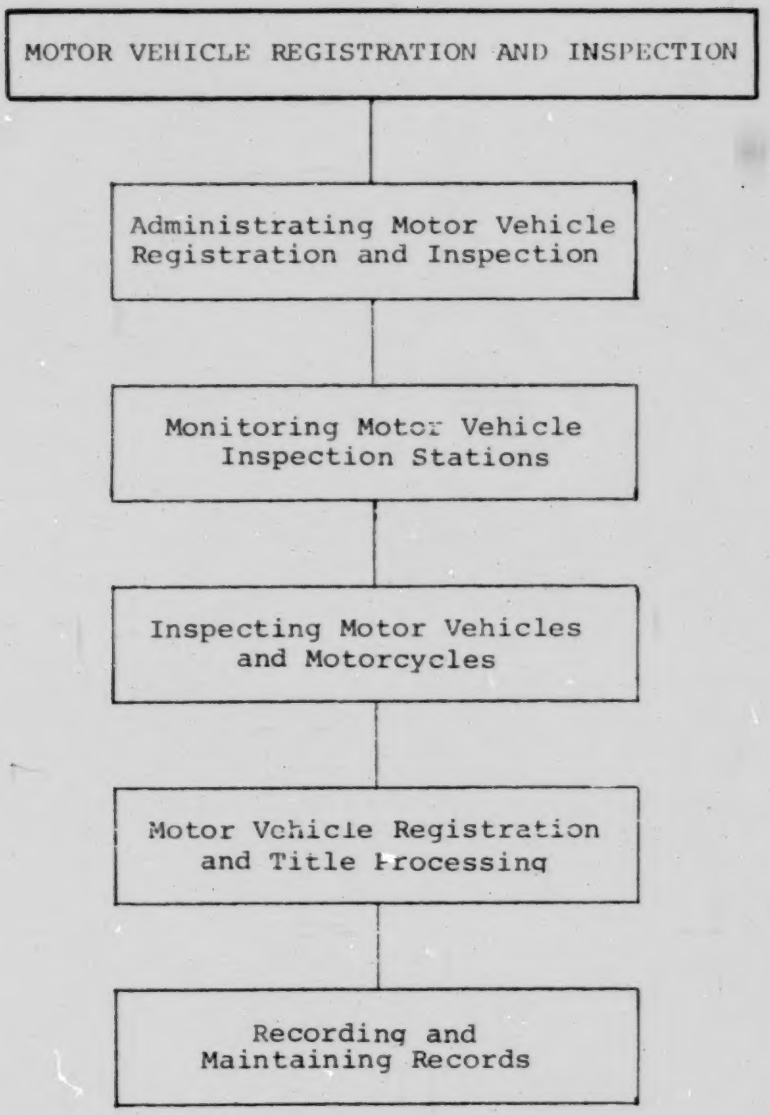
MOTOR VEHICLE REGISTRATION AND INSPECTION
Administrating Motor Vehicle Registration and Inspection
Monitoring Motor Vehicle Inspection Stations
Inspecting Motor Vehicles and Motorcycles
Motor Vehicle Registration and Title Processing
Recording and Maintaining Records

Figure 6. Functions of Motor Vehicle Registration and Inspection

vehicle registration and title processing, and recording and maintaining records.

The responsibilities of the function usually include planning and updating vehicle registration and inspection programs, developing and implementing policies, staffing and personnel development, drafting legislation and preparing recommendations for the governor, maintaining public relations, interpreting federal and state highway safety laws, and performing liaisons between federal and state government and local registration and inspection programs. Other responsibilities of administrating motor vehicle registration and inspection usually include licensing and certification of personnel, securing funds and preparing budgets for the program, providing periodic reports, and testing and approving new equipment to be used in registration and inspection of vehicles.

Administrating the program contributes to highway traffic safety by providing the leadership and coordination necessary to ensure that local motor vehicle registration and inspection rules and regulations are compatible with federal and state highway safety laws and needs.

Performance of this function was observed in a western capital city under the job title "Registrar of Motor Vehicles," and in a midwestern capital city under jurisdiction of the state highway patrol. In some states, motor vehicle registration and inspection are within one department, while in others there exist two separate bureaus.

MONITORING MOTOR VEHICLE INSPECTION STATIONS

States requiring periodic motor vehicle inspection have either state owned, or privately owned but state sanctioned motor vehicle inspection stations. These stations may be monitored periodically or at random, depending on the state program for safety inspection.

Monitoring the inspection station involves checking personnel, equipment, and procedures for compliance with state laws covering possession and condition of safety inspection equipment and facilities, certification and competence of personnel performing inspections, and proper utilization of safety inspection forms and procedures. A completed checklist noting adequacies and deficiencies of the station in any of the three areas mentioned, along recommendations for improvement, suspension, or revocation of the inspection license, is sent to the state body governing motor vehicle inspection.

The monitoring of motor vehicle inspection stations contributes to highway traffic safety by ensuring that inspection of all motor vehicles adheres to the safety standards specified by NHTSA and the individual state. It thus attempts to keep unsafe vehicles off the highways.

Observation of this function being performed in a midwestern city identified the job title, "Supervisor, Motor Vehicle Inspection Stations." In other states, this function is performed by members of the state highway patrol.

INSPECTING MOTOR VEHICLES AND MOTORCYCLES

When inspecting motor vehicles and motorcycles periodically, a thorough inspection for compliance with state standards is performed on the safety components of the motor vehicle, aided by federal and state guidelines and state-approved testing equipment. These safety components include lights, mirrors, horns, windshield wipers and glazing, body and sheet metal, tires and wheels, exhaust systems, brakes, steering and suspension, and any other safety features required to be inspected by that particular state or municipality.

Some states also employ random vehicle inspection programs. During 1971, some 2,000 motorists were arrested and their cars impounded when the autos failed to meet minimum standards after being stopped by Ohio State police. In California, safety inspections are usually made anytime a vehicle is stopped by police ("How California . . .," 1972). Random motor vehicle inspection is usually performed at temporary roadside sites, whereas periodic inspection is performed in motor vehicle inspection stations. Random inspection may implement a much less extensive program of inspection when certain testing equipment cannot be transported to temporary sites. A checklist is followed for inspection and recommendations for repairs or adjustments and certification of approval or rejection are issued for the vehicle and reported to the state vehicle licensing, policing and/or central highway records agencies.

The purpose of inspecting motor vehicles and motorcycles is to have dangerous or unsafe vehicles repaired or removed from the highway.

In a small midwestern city, observation of the inspection of motor vehicles came under the job title, "Motor Vehicle Inspector," and in a large midwestern capital city under the jurisdiction of the state highway patrol.

MOTOR VEHICLE REGISTRATION AND TITLE PROCESSING

The function of motor vehicle registration and title processing involves both recording the title of ownership of a motor vehicle and periodically registering it with the state agency responsible for motor vehicle regulation. The responsibilities of motor vehicle registration and title processing include collecting and recording information concerning the type and size of vehicle, year, manufacturer, and model of the vehicle, and information about the owner, consisting of name and address and any other information deemed necessary by the state agency. After receiving adequate information, specific duties of the function include completing registration and title applications, approving or denying applications according to state standards, collection of registration or title fees, and issuing transfers or new certificates of title, and certificates of registration and license plates or renewal tags.

The function of motor vehicle registration and title processing contributes to highway traffic safety by making available pertinent data concerning numbers and types of vehicles registered for use in accident and injury causation research, and for highway safety planning in development of highway facilities and safety programs. In cases where vehicle registration and licensing requires a vehicle safety inspection, emphasis is placed on certifying only mechanically safe vehicles for highway operation.

Motor vehicle registration and title processing was observed being performed in a western capital city under the job titles "Registration Assistant," "Cashier," and "Clerk." Many states that register all vehicles at one time each year, enlist the services of private companies and organizations in order to assist them in registration and issuing of license plates, while some states allow mail-in registration renewal.

RECORDING AND MAINTAINING RECORDS

The function of recording and maintaining records consists of keeping updated records and files of motor vehicle registrations, vehicle title applications and certificates, and certificates of inspection approvals. The data from these records in turn is submitted to a central records system for use by state agencies and enforcement divisions.

Additions and revisions in applications and certificates provide accurate and recent data for the record systems.

This function contributes to highway traffic safety by making available vehicle and driver data that is both accurate and relative for use in planning highway safety programs, accounting for vehicles on the roadway, and for use by enforcement personnel in identifying vehicles and drivers involved in accidents, thefts, etc.

"Clerk Typist," and "Records Analyst" were the job titles given to performance of this function as observed in a western capital city.

DRIVER AND TRAFFIC SAFETY EDUCATION

INTRODUCTION

Driver and traffic safety education, as described in the National Education Association's publication, Policies and Practices for Driver and Traffic Safety Education (1964), is defined as: "Learning experiences provided by the school for the purpose of helping students to become good traffic citizens and to use motor vehicles safely and efficiently."

The primary objectives of driver and traffic safety education are to:

1. Prepare students for entry into the highway traffic system as vehicle operators with at least minimum performance capabilities.

2. Equip students with knowledge and thought processes that will enable them to make wise decisions in situations that could lead to impaired driving performance (alcohol, drugs, fatigue, emotions, and vehicle maintenance.)

3. Help students acquire the insights and motivations needed to become fully functioning operators and responsible members of the highway traffic system (Aaron, 1971).

Driver education began in 1932 with only six schools offering driving courses. Today, high schools in every state as well as adult education classes and commercial driving schools offer courses in driver education. Many high schools also offer courses in motorcycle safety and most elementary schools have programs of instruction in bicycle and pedestrian safety. It is now widely recognized that driver and traffic safety education in the schools is one of the best ways to teach the proper attitudes, knowledge, and skills needed for responsible motoring citizenship.

The concern for driver and traffic safety education was expressed in Standard 4 of the Highway Safety Act of 1966:

> The Secretary shall not approve any State highway safety program under this section which does not...

(e) provide for comprehensive driver training programs, including (1) the initiation of a State program for driver education in the school systems or for the significant expansion and improvement of such a program already in existence, to be administered by appropriate school officials;... (2) the training of qualified school instructors and their certification; (3) appropriate regulations of other driver training schools, including licensing of the schools and certification of their instruction; (4) adult driver training programs, and programs for the retraining of selected drivers.

Five functions of Driver and Traffic Safety Education are: (1) Administrating Driver and Traffic Safety Education Programs; (2) Training Highway Safety Instructional Personnel; (3) Teaching Automobile Driving Safety; (4) Teaching Motorcycle Safety; and (5) Teaching Bicycle and Pedestrian Safety (See Figure 7).

ADMINISTRATING DRIVER AND TRAFFIC SAFETY EDUCATION PROGRAMS

The function of administrating driver and traffic safety education programs involves developing and implementing program policies and providing direction in all areas of driver and traffic safety education, including training highway safety instructional personnel, teaching automobile and motorcycle driving safety, and teaching bicycle and pedestrian safety.

Responsibilities of administrating driver and traffic safety education programs at the state level consist of planning, evaluating, and updating traffic safety education programs; drafting legislation or recommending executive action to improve the programs; and staffing and training of personnel. Additional duties include maintaining public relations with the news media, school systems, insurance companies, and the various other highway traffic safety agencies, and providing liaison between participating programs and the Office of the Governor's Highway Traffic Safety Representative, as well as NHTSA.

On the local level, responsibilities include: providing the opportunity for all persons of driving age to enroll in state approved automobile or motorcycle driver education courses, and for all school-aged children to receive instruction in bicycle and pedestrian safety; executing state standards for course content, teacher certification, and physical facilities of the driver and traffic safety education programs. Other activities involve gathering information concerning local pro-

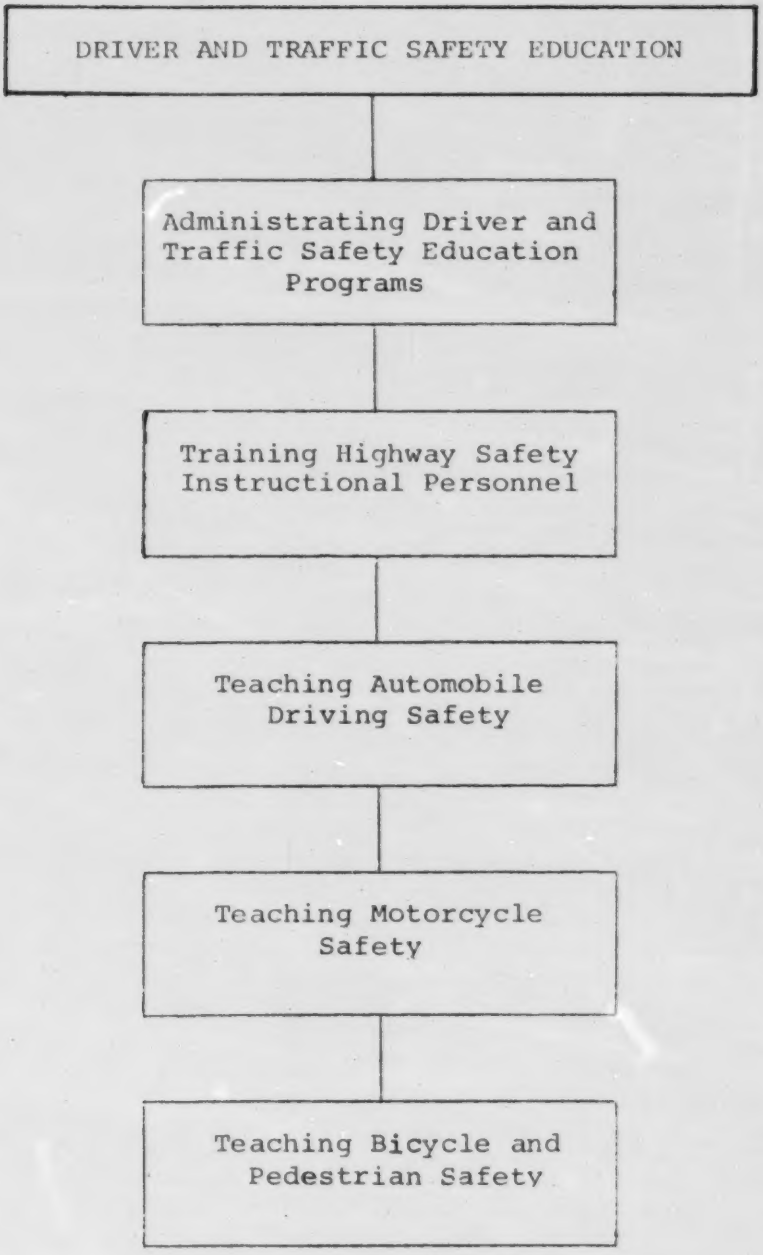
DRIVER AND TRAFFIC SAFETY EDUCATION
Administrating Driver and Traffic Safety Education Programs
Training Highway Safety Instructional Personnel
Teaching Automobile Driving Safety
Teaching Motorcycle Safety
Teaching Bicycle and Pedestrian Safety

Figure 7. Functions of Driver and Traffic Safety Education

grams in order to identify areas in need of program development or research attention; and maintaining adequate records for use in statistical analysis and evaluation of programs to determine the effects of the programs in furthering highway traffic safety. Some of the more specific duties of administration include purchasing materials and equipment such as course guides and driving simulators, securing state and federal funds to operate the programs, preparing budgets, and submitting periodic or annual reports.

Administrating driver and traffic safety education programs makes a significant contribution to highway traffic safety by providing the leadership and coordination essential to implementing a successful program, and by assuring that local programs meet the requirements of state and federal standards.

Performance of this function was observed in a large western city under the job title, "Supervisor of Traffic and Safety Education," on the state level; and on the local level in a small western city under the job title, "Supervisor of Driver Instruction," in a local school district. The function was also observed being performed in a metropolitan midwestern city under the job title, "President," in a commercial driving school.

TRAINING HIGHWAY SAFETY INSTRUCTIONAL PERSONNEL

> It is the consensus of highway safety experts that it is the human element of the highway transportation system which needs the greatest attention to improve highway safety, in terms of better driver education and training programs (NHTSA, 1972).

Adequate training of highway traffic safety instructional personnel enhances the probability that students in all phases of driver and traffic safety education will receive sufficient instruction in order to meet the qualifications of driving on the nation's streets and highways.

Both classroom preparation and behind-the-wheel driving instruction are included in the training of highway safety instructional personnel. Emphasized in the classroom are laws and regulations of driver education, basic driving fundamentals, defensive driving, and vehicle maintenance. Closed circuit television, films, tapes, charts, driving simulators, and training manuals are utilized in instructing personnel.

Various instructional methods to be employed in teaching future students are emphasized. The behind-the-wheel instruction

consists of driving in the presence of a licensed instructor or observing a student being taught by a licensed instructor, to realize the effectiveness of various teaching methods. The teach-back method, requiring the student to teach the instructor can be a valuable element of the behind-the-wheel instruction. It also assists the teacher in the actual student instruction for various phases of driver education including automobile, motorcycle, and school bus driving instruction. The preparation of curriculum, conducting of research in driver education, program evaluation, and reviewing and revising courses are also responsibilities within the training function. An additional element in many programs is the training of instructional personnel who in turn will teach the handicapped.

The training of highway traffic safety instructional personnel makes a significant contribution to the overall highway safety program by providing trained instructors for teaching students to be better and safer drivers.

The function of training highway traffic safety instructional personnel was observed on a southwestern university campus under the job title, "Professor, Driver Education"; in a metropolitan midwestern city under the job title, "Teacher Trainer" in a commercial driving school; on a midwestern university campus under the job title, "Instructor, Motorcycle Safety"; and in a small midwestern city under the job title, "Instructor, Bus Driving Trainer."

TEACHING AUTOMOBILE DRIVING SAFETY

The need for adequate teaching in automobile driving safety becomes very apparent when one considers that

> It is estimated that the human element is responsible for 80-85 percent of all traffic accidents. Driving responsibilities and skills have increased as the highway transportation system has become more complex and crowded (Daugherty, et al., 1971).

It is obvious that even a small improvement in driver skills and attitudes will have a major impact on reducing the number of traffic accidents.

Automobile driving safety has two teaching areas: classroom and laboratory instruction. Teaching in the classroom involves instruction in the identification and purpose of signs and laws of the highways; the legal and financial responsibilities of driving; the operation, control, and maneuvering of an

automobile under various road, weather, and traffic conditions; defensive driving; and the importance of automobile safety components and personal driving habits. Laboratory teaching requires putting into practice the theories of operation, control, and maneuvering of automobiles under a variety of road, weather, and traffic conditions. Quizzes, films, and driving simulators are used in aiding classroom instruction, while dual-control automobiles are sometimes used in the laboratory phase.

Teaching automobile driving safety contributes to highway traffic safety by providing adequate instruction in exposing students to traffic laws and driving conditions which can help them become better and safer drivers.

Performance of the function of teaching automobile driving safety was observed in a far western city in a public school system under the job title, "Teacher, Driver Education," and in a metropolitan midwestern city in a commercial driving school under the job title, "Driving Instructor." Also, several special emphasis programs in driver education were observed. In a midwestern university, driver education was observed being taught to physically handicapped students; in a large southern city elements of defensive driving were being taught under the direction of the National Safety Council; and in another southern city the driver education teaching assistant's program was stressed.

TEACHING MOTORCYCLE SAFETY

Standard 3 of the 1966 Highway Safety Act has listed as its number one objective, "to provide for education and training in the proper and safe operation of a motorcycle" (FHA, 1969, p.2). The increased number of registered motorcycles on the nation's highways (from 595,669 in 1961 to 3,787,000 in 1972) has added problems to the already complex traffic situation, and has warranted a program of motorcycle safety education. More than fifty percent of motorcycle crashes involve operators with less than two years of motorcycle driving experience. This suggests that education and training are needed to prepare drivers for the initial period of motorcycle operation (FHA, 1969).

Typically motorcyclists sustain severe injuries in motorcycle accidents (Potter, 1973). Therefore, teaching motorcycle safety emphasizes defensive driving in the classroom portion of the program. Primary objectives of classroom teaching include aiding the student in understanding motorcycle laws and regulations, acquiring a knowledge of the mechanical operation and maintenance of motorcycles, developing adequate manipulative

skills to avoid accidents, and identifying safety hazards unique to motorcycle operation. Utilization of films, quizzes, and driving simulators assist in teaching motorcycle safety in the classroom.

In the laboratory, motorcycle safety students are taught operational techniques such as starting and stopping the motorcycle; up-shifting and down-shifting; manuevering the motorcycle; riding with a passenger and in groups; and advancing to driving under a variety of environmental conditions including road conditions, weather conditions, and traffic conditions.

Teaching motorcycle safety contributes to highway traffic safety by developing better informed, trained, and safety-motivated motorcycle operators.

The function of teaching motorcycle safety was observed in a southern university under the job title, "Professor, Motorcycle Safety." However, the function is also performed in many public school driver education systems and in commercial driving schools under the job title, "Instructor, Motorcycle Safety."

TEACHING BICYCLE AND PEDESTRIAN SAFETY

The teaching of bicycle and pedestrian safety is often a part of the school curriculum primarily for children in kindergarten through third grade. Children five to fourteen years of age are the predominant victims of bicycle and pedestrian accidents. Two out of three bicycle riders killed or injured in collisions with automobiles have violated a traffic or safety rule (Calvin, 1973). This emphasizes the need for early development of safety habits in pedestrians and bicyclists.

Through bicycle and pedestrian safety instruction, students are taught basic traffic laws and regulations for motorists, pedestrians, and bicyclists, including identification of traffic signs, obedience to traffic control devices, and adherence to safety rules for both pedestrians and bicyclists.

Pedestrian safety rules include knowing when, where, and how to cross streets; wearing proper clothing when walking day or night; and being familiar with laws and ordinances related to highway traffic safety. Bicycle safety rules include knowing when, where, and how to ride a bicycle safely; having proper safety equipment on the bicycle and in personal clothing, and the proper signaling for safe riding.

Teaching bicycle and pedestrian safety contributes to highway traffic safety by building an awareness of its importance in

children so that they may take precautions and follow safety rules to help prevent bicycle and pedestrian accidents.

Performance of the teaching bicycle and pedestrian safety function was observed in a midwestern capital city school system under the job title, "Elementary Teacher." However, it is a basic responsibility of parents to assist the schools in teaching bicycle and pedestrian safety.

PEDESTRIAN SAFETY

INTRODUCTION

Pedestrian safety is an important component in today's highway traffic safety programs. The need for such concern is evident in that almost 20 percent of traffic deaths each year, 10,700 in total, are pedestrian deaths (NSC, 1973). The current emphasis is in contrast to the mid-1930's when most traffic regulations were aimed toward drivers, and forty percent of all traffic fatalities were pedestrians (AAA, 1965a).

Highway Safety Program Standard 14, Pedestrian Safety, requires that each state in cooperation with its political subdivisions, develop and implement a program to insure the safety of pedestrians of all ages (FHA, 1969). Each statewide program should provide:

1. A continuing inventory of pedestrian-motor vehicle accidents.
2. Operational procedures for improving the protection of pedestrians.
3. The means for familiarizing drivers with pedestrian problems.
4. Facilities for training and educating the public as to safe pedestrian behavior.
5. A safety plan aimed at protecting school children.
6. Guidelines for establishing and enforcing traffic regulations aimed at reducing vehicle-pedestrian conflicts.
7. Periodic evaluation of traffic safety programs.

Before Standard 14 had been issued, all 50 states had legislation which enabled communities to enact and enforce pedestrian control regulations. Unfortunately, some of these state regulations had never been reviewed or updated since their inception and relatively few were enforced to any extent (AAA, 1965a). Even since the issuance of Standard 14 in 1969, many communities have yet to review, update, and enforce their pedestrian safety programs to conform with federal recommendations.

The purpose of the federal pedestrian safety program is to reduce the incidence of vehicle-pedestrian collisions and the resulting injuries; and to emphasize and stimulate recognition of pedestrian safety as an integral, constant, and important element of community planning and of all aspects of highway transportation (FHA, 1969). In some localities, environmental improvements at designed pedestrian crossings have resulted in substantial reductions in pedestrian-vehicular accidents ("Giant Signals...," 1972).

Two functions that are vital to implementing the pedestrian safety program are Administrating Pedestrian Safety Programs and Guarding Pedestrian Crossings (see Figure 8).

ADMINISTRATING PEDESTRIAN SAFETY PROGRAMS

The function of administrating pedestrian safety programs involves developing and implementing program policies and providing direction in all areas of pedestrian safety for both school children and the general public.

The overall responsibilities of administrating pedestrian safety programs consist of planning, evaluating, and updating pedestrian safety programs; drafting legislation or recommending executive action to improve the programs; staffing and training personnel; maintaining public relations with the news media, police traffic services, and school systems; and providing liaison between those participating in the program and the Office of the Governor's Highway Traffic Safety Representative's Office, as well as NHTSA.

On the local level, responsibilities include investigation of intersections to determine which need crossing guards or traffic signals; working in cooperation with schools, parents, police, and traffic engineering departments in coordination with the pedestrian safety program; and training, evaluating, and updating personnel guarding pedestrian crossings. Some of the more specific duties of local pedestrian safety administration include purchasing materials and equipment, securing state and federal funds to operate the program, and preparing budgets and periodic or annual reports.

Administrating pedestrian safety programs contributes significantly to highway traffic safety by (1) providing the leadership and coordination essential to implementing a successful program, and (2) by assuring that local traffic rules and regulations concerning pedestrian safety are compatible with federal and state laws and recommendations.

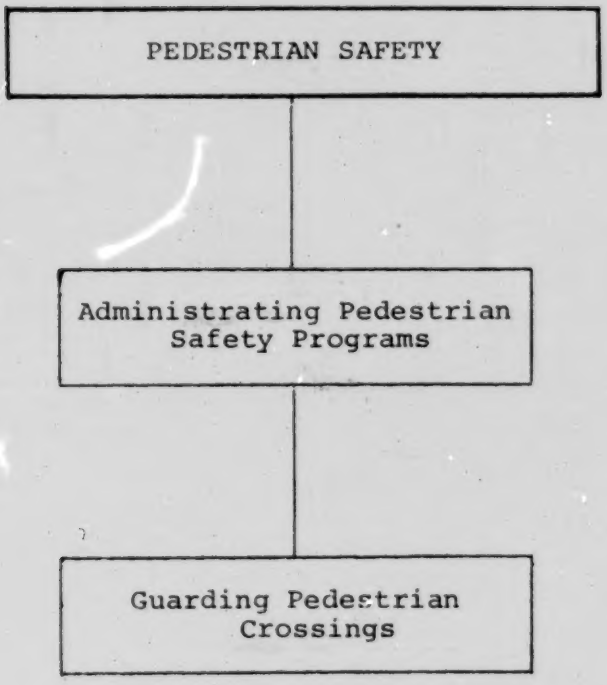

Figure 8. Functions of Pedestrian Safety

Various job titles are given to the function of administrating pedestrian safety programs. Observation revealed the different titles: "State Director of Pedestrian Safety," in a large eastern city; and "School Crossing Guard Coordinator" and "Traffic Supervisor," in a metropolitan western city. This function is also performed in police departments under the job titles, "Traffic Division Commander," "Divisional Traffic Supervisor," or "Chief of Police."

On the local level, most crossing guard programs are organized and administered by the police department. Such programs require close cooperation among school authorities, the police department, and traffic engineers. To be most effective, the program should be administered by a single agency (Wantoch, 1971).

GUARDING PEDESTRIAN CROSSINGS

The primary responsibility of guarding pedestrian crossings is to assist pedestrians in crossing streets safely. Most guarded pedestrian crossings appear in school areas. This is because youngsters under fifteen years of age dominate the overall pedestrian accident picture. The annual toll of 2,800 child pedestrian deaths represents only about one-fourth of all pedestrian deaths; but of the 150,000 pedestrians injured each year, one-half (75,000) of them are youngsters under fifteen. One out of every five (15,000) are struck while on the way to or from school, and 93 percent of these are struck at locations where no special school crossing protection, such as safety patrols, adult crossing guards, or signals is provided (Calvin, 1973).

Crossing guard duties include conducting and directing pedestrians safely across streets at designated crosswalks, taking advantage of breaks in traffic flow, recording and reporting license numbers and description of vehicles failing to stop on signal or deliberately violating traffic laws, reporting damaged or malfunctioning crossing signs or signals, and caring for persons injured while crossing the street and filing reports describing the circumstances involved in the accident.

Guarding pedestrian crossings makes a significant contribution to highway safety by assisting pedestrians in safely crossing streets to prevent vehicle-pedestrian collisions and to reduce traffic deaths and injuries.

In a metropolitan western city the function of guarding pedestrian crossings was observed being performed under the job title "School Crossing Guard," under the jurisdiction of the

city police department. These guards were adults, consisting of housewives, college students, retired persons, and other part-time workers. However, in many other locales, guarding pedestrian crossings is performed by police traffic patrolmen, usually during peak traffic periods at busy intersections; and by school children participating in school safety patrol programs and guarding intersections near their schools.

TRAFFIC COURT SYSTEMS

INTRODUCTION

Standard 7 of the Highway Safety Act of 1966 provided guidelines for the establishment and operation of the traffic court systems. In 1966 there were approximately 100 million licensed drivers in the United States, to which more than 30 million traffic citations were issued. Of those 30 million, approximately 18 million were issued for illegal parking and nonmoving violations, while the other 12 million were for serious moving violations. Of the 12 million citations for serious moving violations, roughly five million were taken care of out of court by paying a fine and waivering a court decision. The other seven million required traffic court appearances (ASF, 1968).

Today, there are more than 118 million licensed drivers in the United States (NSC, 1973), an almost 20 percent increase since 1966. A similar increase in traffic court cases has warranted a stricter adherence to NHTSA recommendations covering traffic court systems as promulgated in Standard 7. The following program elements should be considered in the review, analysis, and evaluation of a traffic court system (FHA, 1969):

1. All individuals charged with moving hazardous traffic violations should be required to appear in court.

2. Traffic courts should be financially independent of any fee systems, fines, costs, or other revenues produced from processing violations of traffic laws.

3. The availability of court services should be expanded for a better administration of justice for alleged law offenders.

4. Efforts to achieve greater uniformity in business administration should be undertaken.

5. Uniform rules governing court procedure in traffic cases should be adopted.

6. Manuals and guides for court administration, procedures, and accounting should be developed and distributed to all courts having traffic case jurisdiction.

The purpose of the traffic court system is to provide guidelines designed to promote greater uniformity of legislation, court rules, and judicial decisions, as well as ensuring advancement of prompt and impartial adjudication of proceedings involving alleged violators of traffic laws (FHA, 1969).

Four functions of the traffic court system are: (1) Administrating Adjudication Systems; (2) Adjudication of Traffic Offenses; (3) Prosecuting/Defending Traffic Court Cases; and (4) Probating Traffic Offenders (See Figure 9).

ADMINISTRATING ADJUDICATION SYSTEMS

The function of administrating adjudication systems involves managing the court; developing and implementing court procedure policies, including assignment of personnel and space, and preparation of court documents; and providing assistance and direction in all areas of the court system, including adjudicating, prosecuting, defending, recording, and probation of cases.

The responsibilities of administrating adjudication systems consist of planning, evaluating, and updating court procedures; investigation of complaints with respect to the operation of the courts in order to make appropriate recommendations for drafting legislation or executive action to improve the system; providing assistance to and training for personnel within the court system, including judges, attorneys, recorders, and secretaries; and providing liaison between the courts and law enforcement agencies, traffic records systems, social service agencies, the office of the governor's highway traffic safety representative, and NHTSA.

Some of the specific duties of the administrating function are purchasing court equipment and materials, staffing all segments of the traffic court systems, and preparing budgets and annual reports as well as compiling data and publishing judicial statistics for access by the public and news media. The administrator is also responsible for the recording and followup of sanctions rendered by the court. This requires maintaining and updating traffic court records and communicating with agencies assigned to execute the imposed sanctions.

Administrating adjudication systems contributes to highway traffic safety by providing the leadership and coordination essential to implementing a successful traffic court system for use in conjunction with other highway safety programs, and by assuring that court procedures are compatible with federal and state standards for traffic court systems.

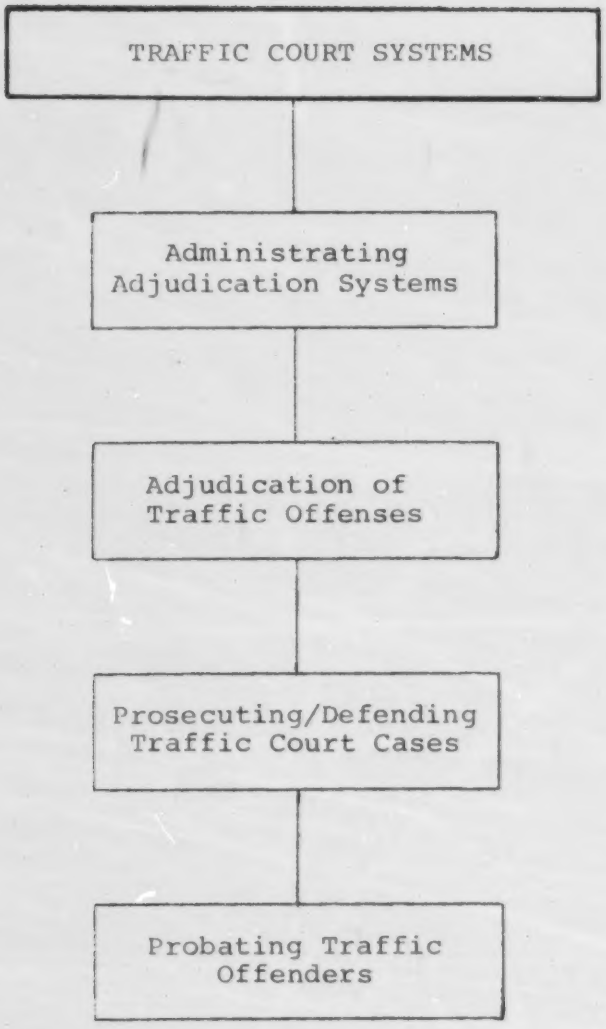

Figure 9. Functions of Traffic Court Systems

Performance of the function of administrating adjudication systems was observed in a northwestern capital city under the job titles, "Court Administrator" and "Clerk of Courts." However, on the state level the function is performed under the job titles, "State Traffic Court Coordinator" or "Administrator."

ADJUDICATION OF TRAFFIC OFFENSES

The function of adjudicating traffic offenses involves presiding over the traffic court, rendering decisions involving traffic offense cases, and applying appropriate standards in determining penalties and rehabilitative measure in each case.

Adjudication of traffic offenses requires hearing testimony from both the prosecution and the defense. The extent of testimony depends to some degree on the seriousness of the offense. For example, in less serious offenses such as excessive speed or failure to yield the right of way, testimony may consist of no more than a report on the defendant's driving history, a statement by the arresting officer, and a plea by the defendant. However, in more serious traffic offenses such as drunk driving or vehicular homicide, presentations by prosecuting and defense attorneys, preliminary investigations by the court, statements by witnesses and the arresting officer(s) and examination of evidence, may all be heard and considered before reaching a verdict in each case.

Some of the conditions to be considered in adjudication of traffic offenses are the indigency or financial status of the defendant, the admissability and relevance of evidence, the defendant's history of traffic law violations and convictions, and the accurate interpretation of existing traffic laws and regulations.

Imposing sanctions on defendants found to be guilty consists of assessing fines, suspension of driving privileges, imprisonment, probation, or referral to an agency such as a driver improvement school or an alcohol rehabilitation agency.

The function of adjudication of traffic offenses contributes to highway traffic safety both by imposing sanctions on traffic law violators aimed at restricting or improving their driving habits, and by acting as a deterrent to potential traffic law offenders.

Adjudication of traffic offenses was observed in a northwestern capital city under the job titles, "Municipal Judge" and "Traffic Court Judge." However, in many areas the function

is performed under the job titles, "Hearing Officer" or "Referee." In the more serious traffic cases such as vehicular homicide, leaving the scene of an accident, or driving while intoxicated, a jury or three-judge panel may be involved in the adjudication function.

PROSECUTING/DEFENDING TRAFFIC COURT CASES

The function of prosecuting and defending traffic court cases is primarily involved in the adjudication of major traffic offenses, such as driving while intoxicated, leaving the scene of an accident, or vehicular homicide.

The responsibilities of prosecuting and defending traffic court cases require possessing a thorough knowledge of traffic laws; collecting and reviewing all available evidence including police reports, physical evidence, and testimony from witnesses; reviewing the evidence in light of existing traffic laws; consulting with other attorneys or legal sources; and appearing in court to present evidence and interrogate defendants and witnesses. In some cases, filing appeals may follow the adjudication of the offense.

> The prosecutor's responsibility does not end with the presentation of cases in court. As a principal law enforcement officer of his district or community, he has the obligation to help shape enforcement policy...He is in a position to know whether the laws are adequate (Reeder, 1972).

The same can be said of those defending as well as prosecuting cases.

> It is the duty of prosecuting and defending attorneys to guard against the introduction of incompetent evidence. It is their duties to present all available evidence tending to aid in ascertaining the truth. The state is just as intensely interested in the acquittal of the innocent as it is in the conviction of the guilty (Reeder, 1972),

Prosecuting and defending traffic court cases contribute to highway traffic safety by attempting to bring the truth before the court in a common effort to make law enforcement an effective means of deterring traffic violations.

The function of prosecuting and defending traffic court cases was observed in a small New England city under the job

titles, "Prosecutor," and "Defense Attorney." However, in minor traffic cases the defendant himself may perform this function.

PROBATING TRAFFIC OFFENDERS

Most probation of traffic offenders exists only in sentencing violators of major traffic offenses, such as driving while intoxicated, leaving the scene of an accident, or vehicular homicide. However, probation is sometimes applied to sentencing of habitual traffic law violators who are considered hazardous drivers.

The responsibilities of probation include being present in court to receive the defendant after sentencing; maintaining and updating probating records of each client in order to inform the court of individual adherence to the terms of the probation; periodically meeting with and counseling the client to discuss terms of the probation and any personal problems affecting the probation; and communicating with other agencies involved in the probation. These include enforcement agencies and social agencies such as Alcoholics Anonymous which may assist in the probation of persons convicted of driving while intoxicated.

Probating traffic offenders contributes to highway traffic safety by regulating or limiting the driving patterns of persons known to be hazardous to highway safety.

Performance of the function of probating traffic offenders was observed in a large southern city under the job title, "Probation Officer." However, in other locales the function may be performed under the titles, "Pre-Sentence Investigator," "Case Worker" or "Social Worker."

ACCIDENT INVESTIGATION

INTRODUCTION

The purpose of the functional area of accident investigation is to establish a uniform, comprehensive motor vehicle traffic accident investigation program for gathering information on motor vehicle traffic accidents and associated deaths, injuries, and property damage.

The federal government estimates that on an average day four persons are injured every minute and one person is killed every ten minutes in traffic accidents ("Making it Safer . . .," 1972).

Motor vehicle crash data is one of the four major divisions of data provided to the traffic records system (other data sources are drivers, vehicles, and highways) (NHTSA, 1972).

These data are then outlined into the traffic records system for use in planning, evaluating, and furthering highway safety program goals.

In May, 1972, the Secretary of Transportation issued Highway Safety Program Standard 18, Accident Investigation and Reporting. The standard established laws and guidelines concerning procedures of investigation and accident reports to be filed. The functional area of accident investigation includes the following three functions: (1) Identifying, Collecting, and Recording Traffic Accident Data; (2) Reporting Traffic Accident Data; and (3) Reconstructing Traffic Accidents (see Figure 10).

ADMINISTRATING ACCIDENT INVESTIGATION

The function of administering accident investigation involves developing and implementing policies and providing direction in all areas of the accident investigation program, including: identifying, collecting, and recording traffic accident data; reporting traffic accident data; and reconstructing traffic accidents.

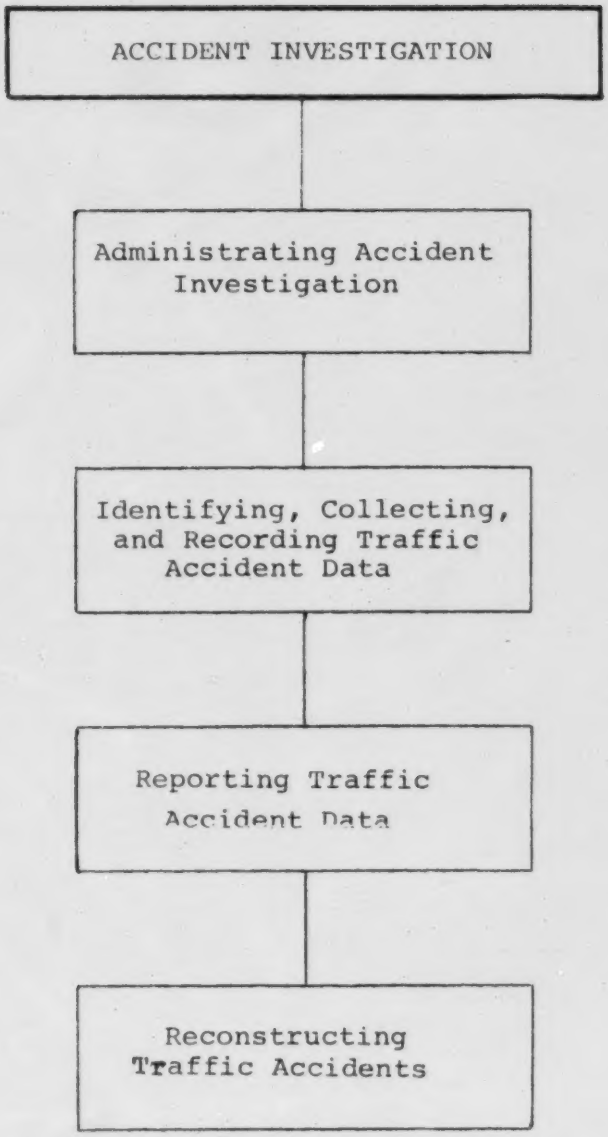

Figure 10. Functions of Accident Investigation

The responsibilities of administrating accident investigation consist of planning, evaluating, and updating accident investigation programs, drafting legislation or recommending executive action to improve the programs, staffing and training personnel, providing liaison between the program and users, and supporting agencies of the program. These include other official highway traffic safety agencies, enforcement agencies, court systems, the office of the governor's highway traffic safety representative, and NHTSA.

Some of the specific duties of accident investigation administration are purchasing equipment; staffing all segments of the program; preparing budgets and annual reports; securing state and federal funding for accident investigation programs; and providing traffic accident information to the courts, the news media, and the public.

The function of administrating accident investigation contributes to highway traffic safety by providing the leadership and coordination essential for implementing a successful accident investigation program, and by assuring that operational procedures are compatible with federal and state standards for accident investigation programs.

The administrating of accident investigation programs was observed in a midwestern capital city under the jurisdiction of the state highway patrol. However, administrators in police traffic services, insurance companies, and other agencies executing accident investigation also perform the administrating function.

IDENTIFYING, COLLECTING, AND RECORDING ACCIDENT DATA

Identifying, collecting, and recording accident data is a function of accident investigation that provides information to traffic records systems for utilization in determining causes of traffic accidents and injuries. The function includes the investigating and gathering of pre-crash, crash, and post-crash data and circumstances involved in the traffic accident. This includes data concerning the pre-crash and post-crash conditions of the vehicles; environmental or roadway factors such as weather and highway signs; and the condition, behavior and extent of injury to all persons involved in the accident.

Identifying and collecting data involves searching for factors related to causes of the accident, determining the

course of vehicles, personally interviewing principals involved and witnesses of the accident, identifying and protecting evidence found at the scene, and conducting follow-up investigations. Recording data involves taking appropriate photographs of the accident scene, making notes as to extent and types of injuries, measuring accident related markings, location of debris and details of damage. This information is then used in preparing field sketches and final diagrams of the accident scene, and for compiling written accident reports.

Identifying, collecting, and recording accident data makes a significant contribution to highway safety by providing information on causal factors of traffic accidents. This function provides a survey and analysis of complex traffic accident situations. The information obtained can be used in developing countermeasure programs to help reduce traffic accidents and injuries. The multi-disciplinary approach to accident investigation that is employed in certain localities emphasizes injury prevention and reduction while other programs concentrate on alcohol, intersection crashes, human factors or vehicle factors.

Accident investigation was observed in a midwestern state under the job title "Accident Investigation Specialist," within the jurisdiction of the state highway patrol. However, this function is also performed by individuals with such job titles as "Police Traffic Patrolman," "Insurance Claim Adjuster," and "Traffic Engineering Technician." Multi-disciplinary accident investigation teams perform indepth investigations of traffic accidents. These teams are composed of such individuals as medical personnel, pathologists, psychologists, mechanical and civil engineers, and auto mechanic technician.

REPORTING TRAFFIC ACCIDENT DATA

Reporting traffic accident data is a function of accident investigation that relays the information that has been identified, collected, and recorded from the records systems.

According to NHTSA (1973), the suggested minimum detailed information on all driver reported motor vehicle traffic accidents should include a detailed identification of the time and location of the accident and type of location, identification of the driver(s) including names, addresses, information from their driver's license and condition of the driver. Identification of passengers, pedestrians, or others involved in the

traffic accident along with their seating arrangements and severity of injuries received as a result of the accident should be recorded. The vehicle(s) should be identified by make, model, year, body type, serial numbers, owner's registration information, odometer reading, damage areas, and direction of travel of each unit. Other factors associated with the accident such as weather conditions, light, traffic control devices, and other environmental conditions should be noted in the report. A narrative description and diagram of the accident indicating accident severity, classification of accident, property damage, direction of travel, purpose of trip, and contributing violations are to be submitted to provide a compilation of accident facts.

When reporting traffic accident data to the courts, photographs, physical evidence, and chemical test results such as blood alcohol concentration (BAC) tests can be reported as evidence in the case.

Reporting traffic accident data contributes to highway traffic safety by providing statistical information that can be used by agencies to determine manpower allocation, enforcement policies and engineering needs in the prevention and control of accidents. Research institutes use the information to develop safety and education programs, driver licensing authorities use it to update their records in order to identify and prohibit unsafe drivers from the highways. Highway engineers use data to improve the design and construction of roadways.

The function of reporting traffic accident data was observed in a midwestern state under the job title, "Accident Investigation Specialist, State Highway Patrol." However, this function is performed on most levels of law enforcement, under the job titles "Police Patrolman," "Sheriff" and "Deputy Sheriff," and "Highway Patrolman." Insurance agents and private accident investigation specialists also, at times, perform this function. There are cases where a governmental agency such as the traffic engineering department, public health department, or others will conduct their own investigation of an accident and report the findings to meet certain data needs of the respective agency or project. The multidisciplinary accident investigation team performs the reporting function by providing detailed documentation of data findings, conclusions, and recommendations compiled into a standard format for users.

RECONSTRUCTING TRAFFIC ACCIDENTS

The function of reconstructing traffic accidents consists of identifying, relating and analyzing the events and circumstances of a traffic accident from the data in the accident report, preparing a detailed report identifying the circumstances and factors contributing to the cause of the accident, and documents events that actually occured and the results.

The function involves a complete detailed analysis of the traffic accident including a complete review of all available documentary data, visits to the accident scene, scale diagramming, measuring, determining environmental influences, examination of damaged vehicles including a critical examination of distorted metals and mechanical components, and interviews with drivers and other persons involved in the accident except in instances when an individual refuses to be interviewed or cannot be located.

Users of the detailed report may include attorneys, insurance companies, courts, research institutions, automobile manufacturers, and official highway safety agencies.

Reconstructing traffic accidents makes a significant contribution to highway traffic safety by pinpointing the causes of traffic accidents, which can be used in developing countermeasures that will prevent similar accidents and reduce deaths, injuries and property damage.

This function was observed in a major southeastern city under the job title "Accident Reconstruction Expert," an independent consultant. However, the function is also performed by traffic enforcement agencies under the job titles "Police Patrolman," "Highway Patrolman," and "Accident Investigation Specialist," as well as "Insurance Investigator" and "Private Investigator." Often an agency responsible for some aspect of highway safety such as a traffic engineering department will have technicians or professionals reconstruct an accident to determine what countermeasures may be employed within the agency's jurisdiction to reduce or eliminate similar accidents. Reconstruction of an accident is often performed by an individual or agency neither of which were responsible for investigating or reporting the accident. The prime purpose of multi-disciplinary accident investigation teams is accident reconstruction, with accompanying recommendations for countermeasures.

POLICE TRAFFIC SERVICES

INTRODUCTION

Highway injuries exceed by ten times all violent criminal acts combined, including homocides, armed robbery, rape, riot and assault. Nevertheless, public response to rising crime rates has led to a severe drain on police manpower and resources devoted to traffic safety activities (NHTSA, 1973), namely the police traffic services.

The police traffic services program expedites the flow of traffic in order to prevent traffic accidents, which ultimately reduces highway deaths and injuries. Several studies strongly suggest that increased traffic law enforcement leads to a reduction of traffic accidents (NHTSA, 1973).

Police traffic services is not limited to the city or local police. It also exists at the county and state levels, varying somewhat in size and scope in accordance with the particular geographic location.

In the functional area of police traffic services, computers and other electronic devices are being used increasingly for various activities such as speed detection and traffic monitoring. The introduction of these devices tends to free manpower for other essential duties ("Cut Speed . . .," 1972).

Standard 15 of the Highway Safety Act of 1966 provides guidelines for police traffic services. Four functions of the program are: (1) Administrating Police Traffic Services; (2) Police Radio Dispatching; (3) Police Traffic Patrolling; and (4) Alcohol Breath Analysis (see Figure 11).

ADMINISTRATING POLICE TRAFFIC SERVICES

Administrating police traffic services is a function that involves developing and implementing policies and directives in all areas of police traffic services, including radio dispatching, traffic patrolling, and the alcohol breath analysis segment of the alcohol countermeasures program.

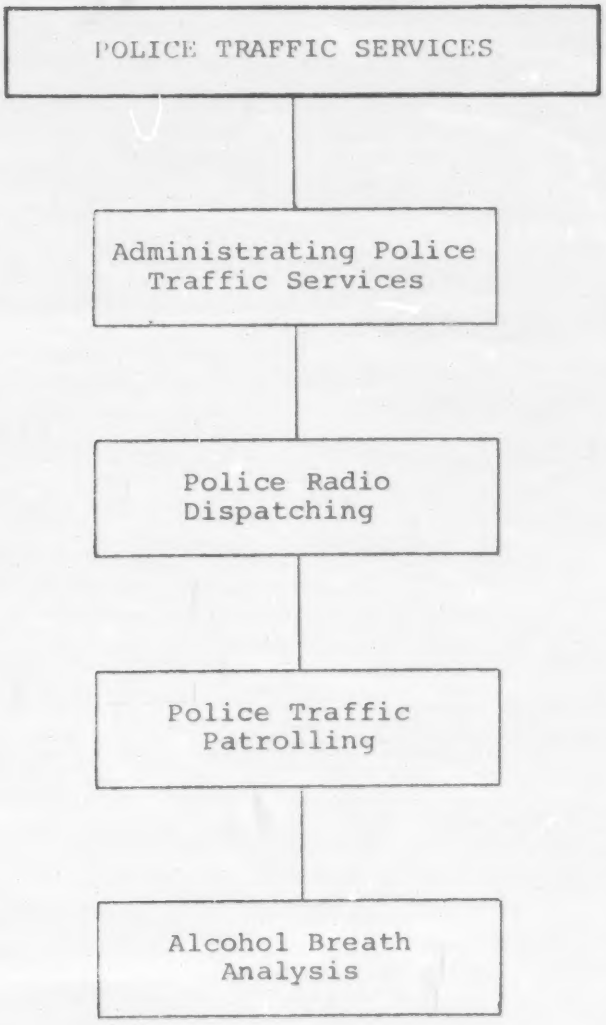

Figure 11. Functions of Police Traffic Services

The responsibilities of this function are similar to administrative duties in other highway traffic safety areas. Responsibilities consist of staffing and training personnel; planning and updating traffic services programs either by drafting legislation or by recommending executive action; maintaining public relations with the news media, courts, and other agencies; interpreting federal and state traffic laws; and providing liaison between the program and the office of the governor's highway traffic safety representative. The more specific duties of administration include, purchasing equipment, preparing budgets and periodic reports, and providing public information concerning police traffic service activities.

Administrating police traffic services makes a significant contribution to highway traffic safety by providing the leadership and coordination essential to implementing a successful program, and by ensuring that local traffic rules and regulations are compatible with federal and state laws and recommendations.

Performance of the administrating police traffic services function was observed in a large midwestern capital city as "Supervisor, Traffic Division." However, this function may be performed in smaller cities under the job title, "Chief of Police," or on the state level within the state highway patrol organization. It may also exist at the county level under the job title, "Sheriff."

POLICE RADIO DISPATCHING

The primary objective of police radio dispatching is to receive and transmit information. Such information helps provide adequate personnel and equipment at scenes of traffic accidents and areas of potential accidents for preventive purposes, as well as direct pursuit of traffic offenders.

Dispatching involves receiving incoming calls and transmitting information to police cruisers, motorcycles, helicopters, emergency vehicles, and perhaps mounted police. It also requires reducing the information received into concise and accurate messages for transmission. Considerations of availability of manpower, familiarity with location, weather and traffic conditions are taken into account to determine which manpower and vehicles are to be dispatched. In addition to making initial contact with personnel, dispatching involves maintaining contact with the vehicles to provide additional help if needed, or to reassign vehicles after completion of

assignment. Some of the larger municipalities are converting portions of their dispatch efforts to a computerized system for both recording and dispatching appropriate vehicle units efficiently.

Incoming calls may be received from private citizens or from other governmental agencies (e.g., fire department or traffic engineering). These calls may be to report traffic accidents or street conditions such as non-functioning traffic signals, missing highway signs, construction areas or traffic flow hampered by high water which require assistance to restore normal traffic flow.

The function of police radio dispatching contributes to highway traffic safety by reducing the response time required for help to reach an accident scene (or a potential accident scene) and thereby prevent further accidents. It also aids in apprehending traffic violaters who present threats to safety on the roadways.

This function was observed in a midwestern capital city under the job title, "Police Radio Dispatcher." However, in other cities the function may be performed under a variety of titles including "Radio Operator," "Police Broadcaster," or "Communications Specialist." It may be performed at the state level by the highway patrol or state police, or at the county (or community) level by the sheriff's department. Also, police radio dispatching and emergency medical dispatching may be performed concurrently.

POLICE TRAFFIC PATROLLING

Police traffic patrolling is a function of police traffic services and includes personnel on foot, in automobiles, on motorcycles, or in helicopters. Traffic patrolling is responsible for maintaining orderly traffic flow and enforcing traffic and motor vehicle laws. Several studies have shown that the mere presence of a traffic patrolman at a particular location can substantially reduce traffic accidents.

Some of the duties of police traffic patrolling include directing traffic at pedestrian crossings; directing and rerouting traffic at scenes of traffic accidents or construction sites; conducting initial traffic accident investigations; and providing information, services, and aid as needed to motorists and pedestrians. The function also involves the identification and apprehension of traffic law violators. Other duties of traffic patrolling include conducting routine

driver license and vehicle inspections, investigating parking violations, post-accident clean-up, and testifying in court cases.

The function of police traffic patrolling includes responsibility for the detection and apprehension of those who exceed the legal speed limit. The percentage of vehicles exceeding 60 miles per hour has tripled since 1960 and it is estimated that approximately 34 percent of all highway deaths are due to excessive speed and excessive speed for prevailing conditions ("Cut Speed . . .," 1972). In some districts computers and other electronic devices are being used to provide round-the-clock traffic monitoring. Computers are also being utilized to identify speeding motorists and for improving traffic flow in urban areas ("Trafficking . . .," 1972).

Traffic patrolling also involves writing reports covering actions taken with regard to traffic controlling and keeping other agencies such as traffic courts, traffic engineering departments and records departments informed in cases where follow-up is required.

Police traffic patrolling makes a significant contribution to highway traffic safety by preventing accidents, both through apprehension of traffic law violators and by being present to deter potential violations that may lead to accidents and injuries.

Performance of this function was observed in a large mid-western capital city under the job titles "Patrolman, Traffic Division" and "Helicopter Patrolman." Patrolling was also observed in a large metropolitan western county law enforcement agency under the title of "Sergeant" where special emphasis was placed on video-taping those apprehended for driving while under the influence of alcohol. However, this function is also performed on the state level under such job titles as "Rangers" and "Highway Patrolmen." In some cases the traffic engineering department may patrol by way of closed circuit television and direct traffic through electronically controlled signals.

ALCOHOL BREATH ANALYSIS

The function of alcohol breath analysis is concerned primarily with measuring the blood alcohol concentration (BAC) of persons suspected of driving while intoxicated, and determining whether or not the presence of alcohol in their systems is sufficient to impair an individual's physical and mental driving capabiliiies.

Alcohol breath analysis involves using a breath test instrument equipped to give a calibrated reading of the blood-alcohol content of the individual being tested. Preparing and cleaning the instrument for each new test, conducting the test, and recording the results in a written report are among the duties of the analyst. Testifying as to test conditions and results in court cases may sometimes be necessary.

In contributing to highway traffic safety, alcohol breath analysis is a function that assists in the identification of drinking drivers. It also provides evidence for restricting or controlling problem drinking drivers who are factors in what is estimated to be more than half of the fatal-injury traffic accidents each year (NSC, 1973).

The function of alcohol breath analysis was observed in a metropolitan southern city under the job title "Police Patrolman--Alcohol Safety Action Project." The actual breath tests were conducted both in a laboratory of the police station, and in a mobile testing van made available to arresting officers throughout the city. In many instances the breath tests are conducted by a laboratory technician or specialist who is not a member of the police force. Other locales may use hospital facilities for alcohol breath analysis, employing laboratory technicians to perform the function. Sheriffs, highway patrolmen, and other law enforcement agencies may perform this function.

PUPIL TRANSPORTATION

INTRODUCTION

Pupil transportation is currently the largest transportation system in the country (NHTSA, 1973). Although pupils have been transported to and from school at public expense in this nation for over a century, it was not until 1919 that all of the (then 48) states had authorized the use of public funds for this purpose (Maeroff, 1972). Currently, the public spends more than one billion dollars annually to transport some nineteen million school children over 2.4 billion miles of the nation's roads (NSC, 1973). This operation requires the use of approximately 260,000 school buses (NHTSA, 1973).

Highway safety statistics indicated that transportation by school bus is one of the safest forms of transportation in the nation. According to NHTSA, school bus transportation is approximately eight times safer than passenger car transportation in spite of the fact that approximately eighty children are killed and 4,500 injured, in or around school buses each year (NHTSA, 1973).

In May, 1972, the secretary of transportation issued Highway Safety Program Standard No. 17, Pupil Transportation Safety, which was designed to improve programs for transporting pupils safely (NHTSA, 1973).

The pupil transportation system involves the five functions: (1) Administrating Pupil Transportation Safety Programs; (2) Servicing, Maintaining, and Repairing School Buses; (3) Inspecting School Bus Components; (4) Scheduling and Routing Pupil Transportation; and (5) Operating Pupil Transportation Vehicles (see Figure 12).

ADMINISTRATING PUPIL TRANSPORTATION SAFETY PROGRAMS

The function of administrating pupil transportation programs involves developing and implementing policy and providing

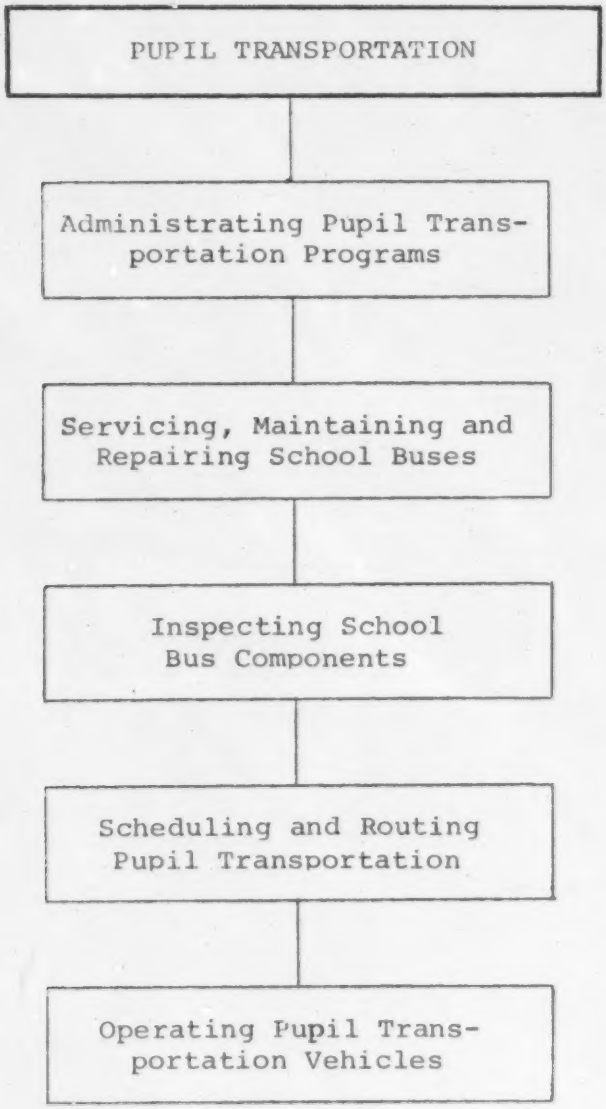
PUPIL TRANSPORTATION
Administrating Pupil Transportation Programs
Servicing, Maintaining and Repairing School Buses
Inspecting School Bus Components
Scheduling and Routing Pupil Transportation
Operating Pupil Transportation Vehicles

Figure 12. Functions of Pupil Transportation

direction in all areas of pupil transportation safety. This includes routing and scheduling, service, maintenance, repair, and inspection, training personnel, purchasing equipment, and updating of programs by regulation and legislation. Other duties include interpreting transportation rules and regulations, data collection, preparing reports, conducting evaluations, supervising the staffing of all segments of the program, and serving as a consultant to various elements of the program.

The function of administrating pupil transportation safety programs contributes to highway traffic safety by providing the leadership and coordination essential to implementing a successful program, and by assuring that local pupil transportation rules and regulations are compatible with federal and state highway safety laws.

Performance of administrating pupil transportation safety programs was observed in a large midwestern state capital under the job title "State Director, Pupil Transportation" and in a medium-sized midwestern city as "School District Supervisor, Pupil Transportation."

SERVICING, MAINTAINING, AND REPAIRING SCHOOL BUSES

The regular service, maintenance, and repair of school buses involves locating, adjusting, correcting, and repairing mechanical defects and breakdowns in vehicles and equipment, including frequent safety equipment inspections. This also involves preparing schedules for service and repair work, coordinating the mechanical work on the workshop floor, keeping vehicle records, and testing vehicles after repairs and maintenance.

Servicing, maintaining, and repairing safety components contributes to highway traffic safety by ensuring that the mechanical condition of the nation's fleet of school buses is at maximum safety for its daily task of transporting the nation's most precious cargo ("School Bus...," 1970).

In a large midwestern capital city, a pupil transportation maintenance program was observed being performed in a local school district by individuals under the job titles "School Bus Fleet Supervisor," "School Bus Mechanic," and "Mechanic-Helper." In many instances the function of maintaining and repairing is accomplished through the services of a private contractor, a private garage or a private mechanic on retainer with a local school district.

INSPECTING SCHOOL BUS SAFETY COMPONENTS

The inspection of safety components of pupil transportation vehicles is intended to ascertain whether the construction and equipment of the vehicle comply with the regulations recommended by NHTSA and any additional state or local regulations. Such items as moving parts, exterior coloring, mirrors, lettering, and lights, as well as interior padding and construction, are checked by the inspecting agency.

In contributing to highway traffic safety, the safety inspection of pupil transportation vehicle components is intended to ensure that all parts are in safe operating condition and all vehicles adhere to safety standards specified by NHTSA and the individual state in order to prevent injuries to young passengers.

The inspection of safety components is usually performed by vehicle inspectors in vehicle inspection stations in states having mandatory inspection programs for all vehicles. School bus inspection was observed in a major midwestern state where there is no mandatory auto inspection. In that state, a team of highway patrol officers inspected school buses in the school parking lots prior to school fall reopening. School buses are also checked for safety in the routine maintenance checks given daily or weekly through the service maintenance and repair function.

SCHEDULING AND ROUTING PUPIL TRANSPORTATION

The objective of routing and scheduling school buses is to gain the greatest utilization of equipment and personnel, for the least expenditure of funds, while maintaining the highest possible safety standards (NHTSA, 1973). The planning of bus routes and schedules includes the making and maintaining of maps of all school bus routes in the school district, locating bus stops, preparing time schedules, preparing lists of pupils transported on each school bus, and assigning buses to routes so as to ensure the most efficient route in terms of distance traveled and maximum pupil capacity. In some districts computers are used to assist in routing and scheduling. The dispatching of school buses is based on the scheduling and routing and may require alterations from these plans where emergencies or special needs arise. In some of the more rural school systems, school buses are being equipped with two-way radios which enable the dispatcher to reschedule or reroute the school bus when enroute.

Efficient routing and scheduling contributes to highway traffic safety by reducing vehicle mileage to a minimum, which reduces chances for accidents involving pupil transportation vehicles. It also provides the safest routes in terms of traffic patterns, hazardous areas, and weather conditions. Locating safe bus stops provides greater protection for children boarding or leaving the bus.

Routing and scheduling of pupil transportation vehicles was observed in several large midwestern city school districts, performed under the job titles of "Transportation Supervisor," "Local Director of Pupil Transportation," and "Routing and Scheduling Specialist."

OPERATING PUPIL TRANSPORTATION VEHICLES

Driving school buses is a function primarily concerned with providing transportation for children to and from school in a manner which insures maximum safety. Demonstrating superior driving skills, observing and being knowledgeable of laws, maintaining routes and schedules, observing loading and unloading procedures of children, instructing students in safe riding practices, and maintaining discipline of the children are all included in the responsibility for operation of the vehicle. Additional responsibilities may include daily inspection and cleaning of the vehicle and preparation of various reports. In the event of an accident, the operating function also includes providing emergency action and care for all passengers until emergency vehicles and technicians arrive on the scene.

The National Safety Council certifies school bus drivers on the basis of their holding a valid first-aid certificate; having periodic physical examinations; annual in-service training, including instruction on emergency procedures. vehicle inspection and reporting defects; completing a defensive driving course; and holding the National Safety Council Safe Driver Award ("Traffic Accident...," 1973).

The contribution to highway traffic safety by operating pupil transportation vehicles is obvious in that each person operating a vehicle is responsible for the safety of as many as 70 children on each trip, as compared to the average automobile driver being responsible for only four or five passengers.

The operation of pupil transportation vehicles was observed in a large midwestern suburb, serving both suburban and rural populations, under the job title of "School Bus Driver."

In many cases throughout the country, pupil transportation is provided by a private contractor or the local municipal transportation system. In such cases, the vehicle is owned by the contractor or local transit company and operated by a professional operator on their pay roll.

Those employed to operate pupil transportation vehicles are often part-time employees who register their occupation as being in some other field such as housewife, farmer, teacher, college student, custodian, etc. There are indications that the function of operating pupil transportation vehicles on a full-time basis is increasing in larger metropolitan areas (NHTSA, 1973). The increasing use of school buses for field trips and other extracurricular activities also tends to promote this function to a full-time job status.

EMERGENCY MEDICAL SERVICES

INTRODUCTION

According to the National Safety Council, some 56,000 traffic fatalities occurred on the nation's highways in 1972. The National Highway Traffic Safety Administration estimates that about 15 percent of the fatalities might have been prevented had adequate emergency medical care been available within twenty minutes of the occurrence of the accident (NHTSA, 1973). This, along with the possibility of reducing the seriousness of many injuries in traffic accidents, emphasizes the necessity of having adequate emergency medical services.

Program Standard 11 of the 1966 Highway Safety Act describes a comprehensive emergency medical services (EMS) system as having the capability to:

1. Provide prompt identification and response to crashes under a range of emergency conditions.

2. Sustain and prolong life through proper first aid and emergency care measures, both at the scene and in transit.

3. Provide the coordination, transportation, and communications necessary to bring the injured person and definitive medical care together in the shortest practicable time, without simultaneously creating additional hazards (NHTSA, 1972).

The purpose of an emergency medical services program for highway traffic safety is to ensure that injured victims of traffic accidents receive prompt and adequate emergency care at the scene of the accident and during transportation to a medical facility.

The functional area of emergency medical services includes the three functions of (1) Administrating Emergency Medical Service Programs; (2) Dispatching EMS Vehicles; and (3) Providing Emergency Medical Service Care (see Figure 13).

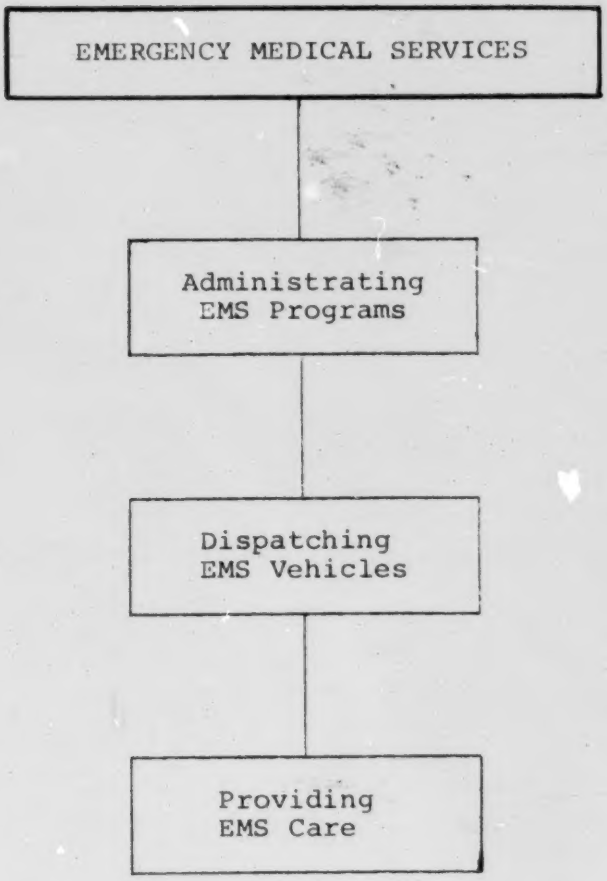

Figure 13. Functions of Emergency Medical Services

ADMINISTRATING EMERGENCY MEDICAL SERVICES PROGRAMS

The function of administrating emergency medical services (EMS) programs involves developing and implementing policies and providing direction in all areas of the EMS program, including dispatching of emergency vehicles, and providing emergency care to victims.

The responsibilities of administrating the EMS programs are similar to administrative duties in other highway traffic safety areas. More specific administrative responsibilities consist of licensing and training personnel; updating programs by recommendation and legislation; interpreting EMS rules and regulations; and providing liaison between the program and supporting agencies, such as state and local health departments, medical societies, hospitals, the American Red Cross, police and fire departments, and the office of the governor's highway traffic safety representative.

Specific duties of emergency medical services administration are purchasing EMS equipment, staffing all segments of the program, preparing budgets and annual reports, obtaining state and federal funding for programs, and providing public information regarding EMS to the news media. These duties are performed with regard to all emergency medical situations, many of which relate to accidents on the nation's highways and streets.

The function of administrating emergency medical services programs contributes to highway traffic safety by providing the leadership and coordination essential to implementing a successful EMS program, and by assuring that local EMS rules and regulations are compatible with federal and state program recommendtions and laws.

Performance of administrating of emergency medical services programs was observed in a metropolitan southeastern city under the job title, "Executive Director, Department of Public Safety." However, in many other locales the function is performed under administrative titles in fire departments and police departments, as well as private rescue squads and ambulance services. The trend nationwide is to no longer have the local funeral home operate a community's emergency medical services.

DISPATCHING EMERGENCY MEDICAL SERVICE VEHICLES

The main objective of dispatching emergency medical services vehicles is to provide emergency care to traffic accident victims in as short a time period as possible, so that the injured will receive prompt and adequate care both at the scene of the accident and enroute to a medical facility. Dispatching not only involves receiving emergency calls and transmitting information to EMS vehicles, but also requires reducing the information received into concise and accurate messages. Considerations of availability of manpower, familiarity of the location of the accident, weather conditions, traffic conditions and the proximity to medical facilities must be taken into account before dispatching messages to a particular EMS vehicle.

In addition to making radio and telephone contact with EMS vehicles, dispatching involves remaining in contact with with emergency vehicle(s) enroute to the medical facility, and utilizing direct communication lines with hospital emergency rooms to advise them on the condition of the inbound patient(s). The extra time permits hospitals to recall professional help or provide additional emergency room space.

The function of dispatching EMS vehicles contributes to highway traffic safety because it reduces the response time for emergency help to arrive at an accident scene, and advance notification allows hospitals to provide more prompt and appropriate care which results in saving lives and reducing the seriousness of injuries.

To make the function of dispatching EMS vehicles simpler and faster, some cities have implemented the universal emergency telephone number, 911, which is a direct line to an emergency medical dispatching center. Since the number is easy to remember and quick to dial, NHTSA has recommended its use throughout the nation.

The dispatching of EMS vehicles was observed in a metropolitan southeastern city under the job title, "Dispatcher--EMS." However, in many cities the function is part of the police traffic or fire department services and is performed under the job title, "Police or Fire Radio Dispatcher." In the case of the private EMS contractor, dispatching may be done by an employee of the contractor or a governmental agency in the community, such as the police force or firemen.

The dispatching function for nonemergency medical purposes is also performed in the functional areas of pupil transportation and police traffic services.

PROVIDING EMS CARE

Providing EMS care is a function of emergency medical services which involves responding to emergency calls and providing prompt emergency medical care both at the scene of an accident and enroute to a medical facility.

The first duties in providing EMS care upon arrival at the accident scene are to create a safe traffic environment for protection of the injured and persons assisting in their care, and protection of property and accident evidence at the scene. This may involve redirecting traffic, removing debris, and placing road signs or flares. Emergency care of victims may include opening and maintaining an airpassage, positive pressure ventilation, cardiac resuscitation, controlling hemorrhageing, treatment of shock, immobilization of fractures, and bandaging injuries. Administering of drugs and intravenous fluids is governed by local and state laws and varies according to the direction of a physician. Care of the injured continues enroute to the hospital, where a verbal and/or written report is usually submitted to hospital staff by those providing EMS care.

A number of states and agencies are now using helicopters as part of their emergency medical services. This trend is expected to increase. Many hospitals throughout the country have installed helicopter lending facilities to aid in speeding the victims to the emergency room. Because of the numerous surface obstructions in built-up urban areas, helicopters are used more often in rural areas and on the freeways to speed aid to crash victims and to transport them to medical care facilities.

EMS care contributes to highway traffic safety by reducing the number of deaths and lessening serious injuries to accident victims through prompt care which could not otherwise be received prior to arrival at a medical facility.

The providing of emergency medical care was observed in a metropolitan southeastern city under the job title, "Emergency Medical Technician." However, in many cities, providing EMS care is a function of the fire or police departments, and may be performed under the job title, "Fireman" or "Policeman." It was also observed in a midwestern capital city which utilized helicopters in addition to regular EMS vehicles, and employed national guardsmen as EMS technicians. In some instances, the EMS care is provided through an EMS technician employed by a private contractor or firm engaged by the community.

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